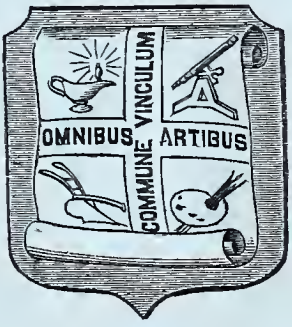
CATALOGUE

OF THE

UNIVERSITY OF MINNESOTA



For the Year 1893

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THE UNIVERSITY OF MINNESOTA

CATALOGUE

FOR THE YEAR

1892-93

AND

ANNOUNCEMENT

FOR THE YEAR

1893-94

BY THE UNIVERSITY
MINNEAPOLIS
1893

The Annual Catalogue, published at Commencement by authority of the Board of Regents, is a record of the membership and condition of the University for the current University year, and also contains the courses of study and other announcements for the University year following.

The Catalogue will be sent gratuitously, postage paid, to all persons who apply for it.

CALENDAR FOR 1893-94.

1893.

JULY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

AUGUST

S.	M.	T.	W.	T.	F.	S.
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
..	..	..	..	..	..	..

SEPTEMBER

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	4	**5**	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
..	..	..	..	..	..	..

OCTOBER

S.	M.	T.	W.	T.	F.	S.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
..	..	..	..	..	..	..

NOVEMBER

S.	M.	T.	W.	T.	F.	S.
..	..	..	1	2	3	4
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12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	**30**	..	..
..	..	..	..	..	..	..

DECEMBER

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	**4**	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	**22**	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

1894.

JANUARY

S.	M.	T.	W.	T.	F.	S.
..	**1**	2	3	4	5	6
7	8	**9**	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
..	..	..	..	..	..	..

FEBRUARY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	..	..	..
..	..	..	..	..	..	..

MARCH

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	**12**	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
..	..	..	..	..	..	..

APRIL

S.	M.	T.	W.	T.	F.	S.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	17	18	19	20
22	23	24	25	26	27	28
29	30	..	..	..	..	..
..	..	..	..	..	..	..

MAY

S.	M.	T.	W.	T.	F.	S.
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
..	..	..	..	..	..	..

JUNE

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	4	5	6	**7**	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
..	..	..	..	..	..	..

University Calendar, 1893-94.

FIRST TERM.

September	5	T	Entrance examinations and registration.
	6	W	" " " "
	7	T	" " " "
	8	F	" " " "
	9	S	" " ..... 1 w
	11	M	Examinations end and registration continued.
	12	T	Registration completed and classes called at 10:45.
	16	S	..... 2 w
	18	M	Literary Societies—7:30 P. M.
	23	S	..... 3 w
	30	S	..... 4 w
October	7	S	..... 5 w
	10	T	Medical Department—Entrance Examinations at 9 A. M. Condition Examinations, 2:00 P. M. Opening Lecture at 8:00 P. M. School of Agriculture opens.
	11	W	Medical Lectures begin.
	14	S	..... 6 w
	21	S	..... 7 w
	28	S	..... 8 w
November	4	S	..... 9 w
	11	S	.....10 w
	18	S	.....11 w
	25	S	.....12 w
	27	M	Term Examinations begin.
	28	T	" " continued.
	29	W	" " concluded.
	30	T	THANKSGIVING DAY.
December	1	F	Examinations for conditioned students.
	2	S	" " " " .....13 w

SECOND TERM.

December	4	M	Registration for second term.
	5	T	Classes called for regular work.
	9	S	..... 1 w
	12	T	Annual Meeting of the Board of Regents.
	16	S	..... 2 w
	22	F	..... 3 w
	23	S	Holiday Recess begins (no classes).
	25	M	CHRISTMAS DAY.

January	1	M	NEW YEAR'S DAY.
	9	T	Work resumed in all departments.
	13	S	..... 4 w
	20	S	..... 5 w
	27	S	..... 6 w
February	3	S	..... 7 w
	10	S	..... 8 w
	17	S	..... 9 w
	18	S	University Charter, 1868. Gen. Sibley died, 1891.
	22	T	WASHINGTON'S BIRTHDAY.
	24	S	.....10 w
March	3	S	.....11 w
	5	M	Term Examinations.
	6	T	" "
	7	W	" "
	8	T	Examinations for conditioned students.
	9	F	" " "
	10	S	" " " .....12 w

THIRD TERM.

March	12	M	Registration for third term.
	13	T	Classes called for regular work.
	17	S	..... 1 w
	24	S	..... 2 w
	30	F	School of Agriculture closes.
	31	S	..... 3 w
April	7	S	..... 4 w
	14	S	..... 5 w
	21	S	..... 6 w
	28	S	..... 7 w
May	5	S	..... 8 w
	12	S	..... 9 w
	19	S	.....10 w
	22	T	Senior Examinations begin.
	23	W	Examinations for promotion and degrees in the Medical Department begin.
	26	S	.....11 w
	29	T	Senior examinations for degrees in the Law Department.
	31	T	Term Examinations.
June	1	F	" "
	2	S	" " .....12 w

COMMENCEMENT WEEK, 1893-94.

Sunday	**June**	3	BACCALAUREATE SERVICE, - -	3:00 P. M.
Monday	**June**	4	FIELD DAY SPORTS, - - - -	2:00 P. M.
			ORATORICAL CONTEST, - - -	8:00 P. M.
Tuesday	**June**	5	SENIOR CLASS EXERCISES, - - -	9:00 A. M.
Wednesday	**June**	6	ALUMNI DAY—Meeting of Alumni, -	2:00 P. M.
Thursday	**June**	7	COMMENCEMENT DAY—	
			Graduating Exercises, - - -	9:00 A. M.
			President's Reception - - -	8:00 P. M.
Friday	**June**	8	SUMMER VACATION BEGINS.	

The year 1894-95 will begin September 4th, 1894.

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PROGRAM OF EXAMINATION, SEPTEMBER, 1893.

The numbers placed after the subjects, when given, indicate the room in which the examination will be held. When no number is given, the examination will be held in room 55 on the third floor of the main building.

DAY.	Hour.	Subjects for admission to the Freshman Class.	For students conditioned in the work of first term Freshmen and Sophomore years.
TUESDAY,	8:00-10:30	English Grammar and Essay.	
SEPT.	10:45- 1:15	Composition.	
5.	2:30- 5:00	Elementary Algebra.	
WED'SDAY	8:00-10:30	Higher Algebra.....	Freshmen Algebra.....38 Sophomore Physics..... §
SEPT.	10:45- 1:15	U. S. History	Freshmen Latin.....48
6.	2:30- 5:00	Plane Geometry.....	Sophomore Rhetoric.....27
THURSDAY	8:00-10:30	Solid Geometry.....	Sophomore French.....43
SEPT.	10:45- 1:15	History of Greece and Rome.....	Freshman Greek.....36 Freshman English.....37
7.	2:30- 5:00	Natural Philosophy.	Sophomore English.....37
FRIDAY,	8:00-10:30	Physiology.....	Sophomore Mathematics 38
SEPT.	10:45- 1:15	Greek.....36 German 35	Sophomore Latin.....49
8.	2:30- 5:00	Latin Grammar.....	Sophomore Greek.....36 Sophomore German.....35
SATURDAY	8:00-10:30	Cæsar 49	Freshman Botany..... ‡
SEPT.	10:45- 1:15	Cicero.....49	Sophomore Chemistry... §
9.	2:30- 5:00	Virgil .....49 English 37	Sophomore Botany..... ‡ Sophomore Zoölogy ..... ‡
MONDAY,	8:00-10:30	Botany..... ‡	
SEPT.	10:45- 1:15	Chemistry .... §	
11.	2:30- 5:00	French .....43 Shakspere .....37 Physical Geogr'y.. ‡	

Students conditioned in the work of the *first term* not mentioned in the above schedule, will arrange with the professors concerned to take their examinations some time during the week.

‡ In Pillsbury Hall.
§ In Chemical and Physical Laboratory building.

History, Organization and Government.

The first official mention of the University of Minnesota is in the second message of Governor Ramsey to the territorial legislature of 1851. He refers to the matter in the following words: After speaking of the school lands, he adds, "As the endowment of a University will also naturally, in this connection, attract your attention, it might be proper to further memorialize Congress for a grant of one hundred thousand acres of land, applicable and available, at a future day, for this most desirable object. The propriety of urging, at this time, the request, arises from the importance of making an early selection, with a view to secure a fair proportion of choice lands."

The memorial above proposed was passed by the legislature on the 10th day of February, and, on the 19th of the same month, Congress passed an act, granting two townships (about 46,000 acres) "for the use and support of a university in said territory and for no other use and purpose whatever."

To Col. John W. North, more than to any other one man, belongs the credit of starting the movement which resulted in the establishment of the University of Minnesota. He it was, as chairman of the legislative committee on education, who framed the following act which was adopted by the legislature February 13th, 1851, as the charter of the University.

Be it enacted by the Legislature of the State of Minnesota:

[*Chapter 28, Revised Statutes.*]

SECTION 1. There shall be established in this Territory an institution, under the name and style of the University of Minnesota.

SEC. 2. The proceeds of all lands that may hereafter be granted by the United States to the Territory for the support of a University, shall be and remain a perpetual fund, to be called the "University Fund," the interest of which shall be appropriated to the support of a University; and no sectarian instruction shall be allowed in such University.

SEC. 3. The object of the University shall be to provide the inhabitants of this Territory with the means of acquiring a thorough knowledge of the various branches of literature, science, and the arts.

SEC. 4. The government of the University shall be vested in a Board of twelve Regents, who shall be elected by the Legislature as hereinafter provided.

SEC. 5. The members of the Board of Regents shall be elected at the present session of the Legislature, and shall be divided into classes, numbered one, two and three; class numbered one shall hold their offices for two years;

class numbered two, for four years, and class numbered three, for six years, from the first Monday in February, one thousand, eight hundred and fifty-one; biennially thereafter there shall be elected in joint convention of both branches of the Legislature, four members to supply the vacancies made by the provisions of this section, and who shall hold their offices for six years respectively.

SEC. 6. Whenever there shall be a vacancy in the office of Regents of the University, from any cause whatever, it shall be the duty of the Governor to fill such office by appointment, and the person or persons so appointed, shall continue in office until the close of the session of the Legislature, then next thereafter, and until others are elected in their stead.

SEC. 7. The Regents of the University and their successors in office, shall constitute a body corporate, with the name and style of the "Regents of the University of Minnesota," with the rights as such, of suing and being sued, of contracting and being contracted with, of making and using a common seal, and altering the same at pleasure.

SEC. 8. The Regents shall appoint a Secretary, a Treasurer, and a Librarian, who shall hold their respective offices during the pleasure of the Board. It shall be the duty of the Secretary to record all the proceedings of the Board, and carefully to preserve all its books and papers; the Treasurer shall keep a true and faithful account of all moneys received and paid out by him, and shall give such bonds for the faithful performance of the duties of his office as the Regents may require.

SEC. 9. The Regents shall have power, and it shall be their duty to enact laws for the government of the University; to elect a Chancellor, who shall be, ex-officio, President of the Board of Regents, or when absent, or previous to the election of such Chancellor, the Board may elect one of their own number President *pro tem.* They may also appoint the requisite number of Professors and Tutors, and such other officers as they may deem expedient; also to determine the amount of their respective salaries; *provided* that the salaries thus determined, shall be submitted to the Legislature for their approval or dissent.

SEC. 10. The University shall consist of five departments: the department of Science, Literature and the Arts; the department of Law; the department of Medicine; the department of the theory and practice of elementary instruction; the department of Agriculture. The immediate government of the several departments shall be entrusted to their respective faculties; but the Regents shall have power to regulate the course of instruction, and prescribe under the advice of the professorships, the books and authorities to be used in the several departments, and also to confer such degrees and grant such diplomas as are usually conferred and granted by other Universities.

SEC. 11. The Regents shall have power to remove any officer connected with the institution, when in their judgment the interest of the University requires it.

SEC. 12. The admission fee to the University and the charges for tuition in the several departments thereof, shall be regulated and prescribed by the Board of Regents; and as soon as in their opinion, the income of the University fund will permit, tuition in all of the departments shall be without charge to all students in the same, who are residents of the Territory.

SEC. 13. The University of Minnesota shall be located at or near the Falls of St. Anthony; and the Regents, as soon as they may deem expedient, shall procure a suitable site for the erection of the University buildings, and they may proceed to the erection of the same as soon as funds may be provided for that purpose, after such plan or plans as may be approved by a majority of said Board

SEC. 14. The Regents shall have the power, and it shall be their duty as soon as the requisite funds shall have been secured for that purpose, to estab-

lish a preparatory department of said University, and employ teachers for the same, who shall be qualified to give instruction in all the branches of learning usually taught in academies; which preparatory department may be discontinued whenever the Regents may think proper, after the other departments of said University shall have been established.

SEC. 15. The Regents are authorized to expend such portions of the fund, which by the provisions of this chapter may come under their control, as they may deem expedient for the erection of suitable buildings, and the purchase of apparatus, a library, and a cabinet of natural history; and the selection, management and control of all lands, which may hereafter be granted by Congress for the endowment of said University, is hereby vested in the Board of Regents.

SEC. 16. The Regents shall make a report annually, to the Legislature, at its regular session, exhibiting the state and progress of the University in its several departments, the course of study, the number of professors and students, the amount of expenditures, and such other information as they may deem proper, or may from time to time be required of them.

SEC. 17. Meetings of the Board may be called by any seven members thereof, at such time and place as they may deem expedient, and a majority of said Board shall constitute a quorum for the transaction of business, but a smaller number may adjourn from time to time.

SEC. 18. The Regents, if they shall deem it expedient, may receive into connection with the University, any college within the Territory, upon application of the Board of Trustees; and such college so received, shall become a branch of the University, and be subject to the visitation of the Regents.

SEC. 19. No religious tenets or opinions shall be required to entitle any person to be admitted as a student in said University; and no such tenets or opinions shall be required as a qualification for any professor, tutor, or officer of said University.

SEC. 20. The legislative assembly may at any time alter, amend, modify, or repeal this chapter.

The Board of Regents, provided for in the above act, was elected by the Legislature, in joint session, on the 4th of March of the same year. The Board consisted of the following: Isaac Atwater, J. W. Furber, William R. Marshall, B. B. Meeker, Socrates Nelson, Henry M. Rice, Alexander Ramsey, Henry H. Sibley, C. K. Smith, Franklin Steele, N. C. D. Taylor, and Abram VanVorhees.

The University, as thus organized, continued until 1860. Among the things accomplished by the Regents during this organization was the erection of a building and the carrying on of a preparatory school for four years; the purchase of a new site; the erection of a part of the present main building; the location of about thirty-five thousand acres of the Congressional grant of land.

The State Constitution, adopted by the people of the State, October 13th, 1857, refers to the University in the following language:

"The location of the University of Minnesota as established by existing laws, is hereby confirmed, and said institution is hereby declared to be the University of the State of Minnesota. All the rights, immunities, franchises and endowments hereto-

fore granted or conferred are hereby perpetuated unto the said University, and all lands which may be granted hereafter by Congress, or other donation for said University purposes, shall vest in the institution referred to in this section."

When the Legislature of 1860 met, it was found that the affairs of the University, owing principally to the financial depresssion of the preceding years, were in such condition that to settle them a new organization of the University, giving the Regents greater powers, was necessary. Accordingly, on the 14th day of February, 1860, the Legislature passed the following act, reorganizing the University:

Be it enacted by the Legislature of the State of Minnesota:

SECTION 1. That the object of the State University, established by the Constitution of the State, at or near the Falls of Saint Anthony, shall be to provide the best and most efficient means of imparting to the youth of the State an education more advanced than that given in the public schools, and a thorough knowledge of the branches of literature, the arts and sciences, with their various applications.

SEC. 2. There shall be attached to the University a Collegiate Department, in which as soon as may be deemed expedient by the Board of Regents, hereinafter provided, regular College Classes shall be formed and a Chancellor and the necessary Professors, Tutors and other officers elected.

SEC. 3. There shall also be a department for the training of Teachers for the Common Schools of the State, in which shall be taught the theory and practice of teaching, and everything that will tend to perfect the elementary and other public schools of the State.

SEC. 4. The University shall be governed and managed by a Board of Regents, consisting of the Governor, Lieutenant-Governor, Chancellor, and five electors of the State to be appointed by the Governor, by and with the advice and consent of the Senate, immediately after the passage of this act, and such other persons as may be appointed in accordance with a subsequent provision. Two of the five persons thus appointed shall hold their office for two years, and three for four years. At the expiration of their terms, successors shall be appointed in the same way for a period of four years. Whenever a vacancy occurs by death, resignation, or removal from the State or otherwise, it shall be the duty of the Governor to fill the vacancy, subject to the confirmation of the Senate.

SEC. 5. Any person or persons contributing a sum not less than fifteen thousand (15,000) dollars, shall have the privilege of endowing a Professorship in the University, the name and object of which shall be designated by the Board of Regents. Said person or persons shall have the right to nominate Trustees for the care of the endowment, also an individual to fill the Professorship, and a Regent who shall have the same rights and privileges as those appointed in behalf of the State.

SEC. 6. The University shall never be under the control of any religious denomination.

SEC. 7. The Chancellor's term of office shall be the same in duration as that of District Judge, and his compensation for the performance of his duties as Chancellor shall be such as the legislature may designate from time to time.

SEC. 8. The Board of Regents shall appoint a Secretary and Treasurer who shall hold their respective offices during the pleasure of the Board of Regents. It shall be the duty of the Secretary to record all the proceedings of the board and carefully preserve all its books and papers, and before enter-

ing on the duties of the same he shall take and subscribe an oath to perform his duties honestly and faithfully.

It shall be the duty of the treasurer to keep an exact and faithful account of all moneys received and paid out by him, and before entering upon the duties of his office, he shall take and subscribe an oath that he will faithfully perform the duties of Treasurer, and he shall also give a bond in the penalty of twenty-five thousand (25,000) dollars conditioned for the faithful discharge of his duties as treasurer, and that he will at all times keep and render a true account of all moneys received by him as such Treasurer, and of the disposition he has made of the same, and that he will at all times be ready to discharge himself of the trust, and to pay over when required, which bond shall have two good sureties and shall be approved as to its form and the sufficiency of its sureties by the Board of Regents and also the Auditor and Secretary of State, and shall be filed in the office of the latter. The compensation of the Treasurer shall be the same as may be from time to time designated by the Legislature.

SEC. 9. In all cases where specimens of natural history, and geological and mineralogical specimens, which may be hereafter collected by any one appointed by the State to investigate its natural history and physical resources, they shall belong to, and be the property of the State University. There shall also be deposited in the Library of the University a copy of all the laws, reports, Journals of the Legislature, and other documents published at the expense of the State.

SEC. 10. The University shall consist of such departments as the Board of Regents shall determine subject to the provisions of this act, and the same may be altered or changed as they may prescribe. The immediate government of the several departments shall be intrusted to the Chancellor and Faculty. The method and course of instruction in each department shall be prescribed by the Board of Regents, who shall also confer such degrees, and grant such diplomas as are usually conferred by Universities, or such others as they may deem proper.

SEC. 11. The Board of Regents shall have power, and it shall be their duty to make laws for the government of the University, to elect a Chancellor, also the requisite number of Professors and Tutors, and such other officers as they may deem expedient, and to determine the amount of their respective salaries, except the salary of the Chancellor. They shall have the power to remove any officer connected with the institution, when the good of the institution demands.

SEC. 12. The Board of Regents are authorized to expend such portion of the University Fund as they may deem expedient in the purchase of apparatus, library and cabinet of natural history, in providing suitable means to keep and preserve the same, and in the procurement of all other means and facilities for giving instruction.

SEC. 13. The first meeting of the Board of Regents shall be called by the present Chancellor on or before the first Thursday in April, in the year one thousand eight hundred and sixty, at the Capitol; the annual meeting of the Board shall be held on the last Tuesday of June at the City of Saint Anthony, unless otherwise ordered by a majority of said Board of five Regents. The Chancellor may call special meetings of the Board when he deems it expedient. A majority of said Board shall constitute a quorum to do business.

SEC. 14. The Treasurer of the University shall have a suitable set of books in which he shall keep an accurate account of all transactions relative to the sale and disposition of the University lands, and the management of the fund arising therefrom; which books shall exhibit what parts and portions of land have been sold, at what prices, and to whom, and how the proceeds have been invested, and on what securities, and what land remains unsold, where situated, and of what value respectively.

SEC. 15. No sales of lands belonging to the University shall take place unless the same shall be decided upon at a regular meeting of the Board of Regents, or at one called for that purpose, and then only in the manner upon the notice and on the terms which the Board shall prescribe, and which is authorized by the Constitution, and no member of the Board shall be directly or indirectly interested in any such purchase of such lands upon sale, and it shall be the duty of the Board to invest any such surplus income arising therefrom, which is not immediately required for the purpose of instruction, in United States, or in other well established, interest paying State Stocks, as a perpetual fund for the purpose of securing an income to defray the necessary current expenses as said Board of Regents may deem expedient.

SEC. 16. The Board of Regents shall make an annual report through the Secretary, which shall exhibit the state, condition and progress of the University, in its several departments, the different courses of study pursued therein, the branches taught, the means and method of instruction adopted, the number of Professors and Students, with their names, ages, studies and residences, the situation and condition of the University fund, the income derived therefrom, a specific statement of the amount of expenditures, and such other matter as said Board of Regents may deem proper to communicate, said report shall be completed and deposited in the office of Secretary of State, one month previous to the annual State election, and shall be transmitted by the Governor to the Legislature when the same shall convene.

SEC. 17. Chapter twenty-eight (28) of the Revised Statutes of the Territory of Minnesota on pages one hundred and forty-two and forty-three and one hundred and forty-four, relating to the University of Minnesota, and containing twenty (20) sections, is hereby repealed, except so much of Section thirteen (13) as is referred to in Article nine (9) Section eight (8) of the Constitution, provided also that the Regents of said University hereafter appointed shall continue as a body corporate in accordance with Section seven (7) of said Chapter twenty-eight (28).

SEC. 18. This act shall be in force from and after its passage.

This organization continued in force for four years and the Regents were principally concerned with the righting of the tangled affairs of the University. They also began the agitation of the matter of a new land grant from Congress for the use of a *State* University, maintaining that the lands granted to the Territorial University had been used in paying off the debts of that institution, aud that the State University had received none of the benefits of the grant. This was not finally settled until 1870, in which year, July 8th, Congress passed an act authorizing the Commissioner of the General Land Office to allow the claim of the State of Minnesota.

On March 4th, 1864, the following act was passed:

Be it enacted by the Legislature of the State of Minnesota:

SECTION 1. Section four of chapter eighty of the session laws of 1860, being an act entitled "An act providing for the government and regulation of the University of Minnesota," approved February 14th, 1860, is hereby amended so as to read as follows:

SEC. 4. O. C. Merriman, John S. Pillsbury and John Nicols, are hereby appointed sole Regents of the University of Minnesota, for the term of two years from the day of the passage of this act. Before entering upon the duties of this office, each of said Regents shall give a bond to the State of Minnesota, executed by himself, and not less than two sureties, to be approved by the State Auditor, in the sum of twenty-five thousand dollars, conditioned for the

faithful and honest performance of his duties as Regent. Said bond shall be filed in the office of Secretary of State.

SEC. 2. Said Regents shall hold an annual meeting in the month of March in each year, and such special meetings as may be called by the President or by any two Regents.

SEC. 3. Said Regents shall elect one of their own number President, and a majority shall constitute a quorum.

SEC. 4. Said Regents are hereby fully authorized and empowered, in their discretion, to arrange, compromise, settle and pay any and all claims and demands of whatever nature against the University of Minnesota, or the Regents thereof, and to that end said Regents are hereby fully authorized and empowered to sell at public or private sale, and convey in satisfaction of any of said claims or demands, or for cash, or on credit, in whole or part, any of the lands donated to the State of Minnesota by the United States, by an act of Congress, entitled "An act donating to the States of Minnesota and Oregon certain lands reserved by Congress for the Territories of Minnesota and Oregon, for University purposes," approved March 2d, 1861. *Provided, however,* That the whole amount of lands so sold and conveyed, shall not exceed twelve thousand acres, and all conveyances of land after that amount shall have been conveyed, shall be absolutely void. No one of said Regents shall be interested directly or indirectly in the purchase of any lands conveyed under the provisions of this act. Said Regents may, in their discretion, authorize the State Auditor to sell at public sale the lands hereby authorized to be sold, or any part thereof. And *Provided further,* That if any person or persons shall purchase any of the lands mentioned in this act, upon which other parties have made improvements, they shall be required to pay the owner of said improvements their appraised value, such value to be appraised by one of the Regents and the County Treasurer and Chairman of the Board of Supervisors of the county where the land may be situated, and one-half of such appraised value shall be paid at the time of sale and the balance within six months thereafter, with interest at seven per cent. per annum, with proper security, to be approved by said County Treasurer. *Provided,* That in appraising improvements upon any of the lands aforesaid, the appraisers shall take into consideration and shall deduct from the value of any such improvements, any waste or damage to said lands by the parties making the improvements or occupying the lands.

SEC. 5. Conveyances of land under the provisions of this act, shall be executed by the President and Treasurer of the Board of Regents, in the name of and under the seal of the University of Minnesota, and such conveyances shall pass all the right, title and interest of said University, as well as the State of Minnesota, in and to the lands conveyed.

SEC. 6. Nothing in this act contained shall be held or taken as an admission of the legal validity of any of the claims or demands aforesaid, or of any obligation to provide for the payment thereof.

SEC. 7. All personal property of every nature and description, including notes, accounts, stocks, bonds, claims and demands, belonging to said University, or the Regents thereof, as well as the proceeds of all sales of lands sold or conveyed under the provisions of this act, while the same are in the hands of, or under the control of the said University or the Regents thereof, or of any one of them, or of any person for them, or either of them, or for said University, or of any State officer, shall be exempt from attachment, garnishee, process, proceedings, supplementary to execution and levy or sale on execution, or any other process issuing out of any court, until otherwise provided by law.

SEC. 8. The present Regents of the University and their Secretary, Treasurer, Chancellor and any and every other officer appointed by said Regents, as well as the Auditor of State, are hereby required to turn over to

the Regents herein appointed, on demand, all books, records, papers, claims, notes, bonds, stocks and personal property of every description belonging to said University or the Regents thereof, and the care of all lands belonging to the University and of the University buildings and grounds, and the leasing of the same and collecting of rent, as well as the adjusting and collecting of all claims of every nature, due or to become due to said University or the Regents thereof, as well as claims for trespasses committed, are hereby committed to the Regents herein appointed and their successors.

SEC. 9. Said Regents are hereby authorized to open or cause to be opened, a school in said University building; *Provided*, That no part of the funds of the University shall be expended for the support of the same.

SEC. 10. The operation of sections two, three, seven, ten, eleven, twelve, thirteen and fifteen of chapter eighty of the session laws of 1860, entitled as hereinbefore recited, is hereby suspended until otherwise provided by law.

SEC. 11. This act shall take effect and be in force from and after its passage, and may at any time be altered, amended or repealed by the Legislature.

Approved March 4, 1864.

The Regents above named were employed, during the following four years, in carrying out the provisions of this act. On the 23d day of December, 1867, this Board made their final report to the Legislature, in which it appeared that they had settled all of the indebtedness of the University save about $6,000 and had left of the land entrusted to them for the purpose of settling the debts of the University, eight hundred and ninety acres. Beside this they had repaired the building on the Campus and organized a course of instruction which had been attended by about fifty students during the year.

The work of this Board having been satisfactorily completed and the purpose for which it was created accomplished, the following act was passed, reorganizing the University:

CHAPTER I, GENERAL LAWS 1868.

AN ACT to reorganize and provide for the Government and Regulation of the University of Minnesota, and to establish an Agricultural College therein.

As amended by Chapter X, of the General Laws of 1872:

AN ACT to amend Chapter I of the Session Laws of 1868, relating to the University of Minnesota.

SECTION 1. The object of the University of Minnesota, established by the Constitution at or near the Falls of St. Anthony, shall be to provide the means of acquiring a thorough knowledge of the various branches of literature, science and the arts, and such branches of learning as are related to Agriculture and the Mechanic Arts, including military tactics and other scientific and classical studies.

SEC. 2. There shall be established in the University of Minnesota, five or more colleges or departments, that is to say, a College of Science, Literature, and the Arts, a College of Agriculture, including "military tactics," a College of the Mechanic Arts, a College or Department of Law, and also a College or Department of Medicine. The department of Elementary Instruction may be dispensed with at such rate and in such wise as may seem just and proper to the Board of Regents.

SEC. 3. The government of the University shall be vested in a board of ten regents, of which the Governor of the State, the State Superintendent of Public Instruction, and the President of the University shall be members *ex officiis*, and the remaining seven members thereof shall be appointed by the

Governor, by and with the advice and consent of the Senate. Whenever a vacancy occurs therein, for any cause, the same shall be filled for the unexpired term in the same manner. Of the regents thus appointed, two shall be commissioned and hold their offices for one year, and two for two years, and three for three years. Their successors shall be appointed in like manner, and shall hold their office for the full term of three years from the first Wednesday of March succeeding their appointments, and until their successors are appointed and qualified. The President of the University shall have the same rights, powers and privileges as other members, except the right of voting, and he shall be, *ex officio,* the corresponding secretary of the Board of Regents.

SEC. 4. The Regents of the University shall constitute a body corporate under the name and style of "The University of Minnesota;" and by that name may sue and be sued, contract and be contracted with, make and use a common seal and alter the same at pleasure; a majority of the voting members shall constitute a quorum for the transaction of business, and a less number may adjourn from time to time.

SEC. 5. The Board of Regents shall elect from the members of the Board a President of the Board, [a] Recording Secretary and [a] Treasurer, who shall hold their respective offices during the pleasure of the Board. And the President and Treasurer each before entering upon the duties of his office, shall execute a bond in the penal sum of fifty thousand dollars, with at least two sufficient sureties, to the State of Minnesota, to be approved by the Governor, conditioned for the faithful and honest performance of the duties of his office according to law, which bonds, when so approved, shall be filed in the office of the Secretary of State.

SEC. 6. The Board of Regents shall have power, and it shall be their duty, to enact by-laws for the government of the University of Minnesota in all its departments; to elect a President of the University, and, in their discretion, a Vice-President, and the requisite number of professors, instructors, officers and employes, and to fix their salaries, [and] also the term of office of each, and to determine the moral and educational qualifications of applicants for admission, and in the appointment of professors, instructors and other officers, and assistants of the University, and in prescribing the studies and exercises thereof; and in all the management and government thereof, no partiality or preference shall be shown to one sect or religious denomination over another, nor shall anything sectarian be taught therein. And the Board of Regents shall have power to regulate the courses of instruction, and [to] prescribe the books and authorities to be used, and also to confer such degrees and grant such diplomas as are usual, in their discretion. It shall be the duty of the Recording Secretary to record all the proceedings of the Board, and carefully preserve all its books and papers; and before entering upon the duties of his office he shall take and subscribe an oath to perform his duties honestly and faithfully as such officer. It shall be the duty of the Treasurer to keep an exact and faithful account of all moneys, bills receivable and evidence of indebtedness, and all securities or property received or paid out by him, and before entering upon his duties shall take and subscribe an oath that he will well and faithfully perform the duties of Treasurer thereof. It shall be the duty of the President to preside at the meetings of the Board; and in case of his inability to preside, the Board may appoint a President *pro tempore*.

SEC. 7. In addition to all the rights, immunities, franchises and endowments heretofore granted to or conferred upon the University of Minnesota, for the endowment, support and maintenance thereof, there shall be and is hereby inviolably appropriated and placed at the disposal of the Board of Regents thereof, to be drawn from the State treasury upon the order of the President, drawn upon the State Auditor, countersigned by the Secretary of the Board and payable to the order of the Treasurer of the Board, all the

interest and income of the fund to be derived from the sales of all lands granted and to be granted to the State of Minnesota by virtue of an act of Congress, entitled "An act donating lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," approved July 2d, 1867; and also all such gifts, grants and contributions to the endowment thereof as may be derived from any and all such sources.

SEC. 8. And in order to effect a settlement of all remaining indebtedness of the University, all the powers and authorities given by Chapter 18 of the laws of 1864, entitled "An act relating to the University of Minnesota," and Chapter 11 of the laws of 1866, entitled "An act to amend an act relating to the University of Minnesota, approved March 4, 1864," to the Regents therein mentioned, are hereby given to and conferred upon the Board of Regents of the University of Minnesota aforesaid; and the said acts are hereby continued and shall be in force until such outstanding indebtedness is fully liquidated.

SEC. 9. The first meeting of the Board of Regents under the provisions of this act, shall be holden at the University building on the first Wednesday in March, 1868, at which meeting the officers of the Board shall be elected, and the annual meetings of the Board shall be holden on the second Tuesday of December in each and every year thereafter.

SEC. 10. Any person or persons contributing a sum of not less than fifteen thousand dollars shall have the privilege of endowing a professorship in the University, the name and object of which shall be designated by the Board of Regents.

SEC. 11. The said Board of Regents shall succeed to and have control of the books, records, building and all other property of the University; and the present Board of Regents shall be dissolved immediately upon the organization of the Board herein provided for; *Provided*, that all contracts made and at the time binding upon the Board then dissolved, shall be assumed and discharged by their successors in office.

SEC. 12. It shall be the duty of the Board of Regents herein provided for, to make arrangements for securing suitable lands, pursuant to the act of Congress above mentioned, in the vicinity of the University, for an experimental farm; and as soon thereafter as may be to make such improvements thereon as will render the same available for experimental purposes in connection with the course in the agricultural college; and for such purpose the Board of Regents is hereby authorized to expend a sum not exceeding the amount specified by the act of Congress aforesaid.

SEC. 13. On or before the second Tuesday in December in each and every year the Board of Regents, through their President, shall make a report to the Governor, showing in detail the progress and condition of the University during the previous University year, the wants of the institution in all its various departments—the nature, costs and results of all improvements, experiments and investigations, the number of professors and students—the amounts of money received and disbursed—and such other matters, including industrial and economical statistics, as they deem important or useful. One copy of said report shall be transmitted to each of the other colleges endowed under the provisions of the said act of Congress, and one copy to the Secretary of the Interior.

SEC. 14. The President of the University shall be the President of the general faculty and of the special faculties of the several departments or colleges, and the executive head of the institution in all its departments. As such officer he shall have authority, subject to the Board of Regents, to give general direction to the practical affairs and scientific investigations of the University, and in the recess of the Board of Regents to remove any employe or subordinate officer not a member of the faculty, and supply, for the time

being, any vacancies thus created. He shall perform the customary duties of a Corresponding Secretary, and may be charged with the duties of one of the professorships. He shall make to the Superintendent of Public Instruction, on or before the second Tuesday in December in each and every year, a report, showing in detail the progress and condition of the University during the previous University year—the number of professors and students in the several departments—and such other matters relating to the proper educational work of the institution as he shall deem useful. It shall also be the duty of the President of the University to make to the Board of Regents, on or before the second Tuesday in December in each and every year, a report, showing in detail the progress and condition of the University during the previous University year—the nature and results of all important experiments and investigations, and such other matters, including economical and industrial facts and statistics as he shall deem useful.

SEC. 15. Chapter eighty of the laws of eighteen hundred and sixty, chapter eighty-seven of the laws of eighteen hundred and sixty-two, and so much and such parts of any and all acts and laws, whether general or special, as are inconsistent with the provisions of this act, are hereby repealed.

SEC. 16. This act shall take effect and be in force from and after its passage.

Approved February 18, 1868. Act to amend approved February 29, 1872.

By virtue of the above act, the land which had been appropriated to the Agricultural College, in McLeod County, became vested in the Board of Regents of the University.

By act of the Legislature of 1858, an Agricultural College was established in McLeod County, on "so much of section 16, township 115, range 28, as may be purchased by the State of Minnesota, and on all lands adjacent that may be donated," the donation to be not less than three hundred and twenty acres, and the same placed under the control of the officers of the State Agricultural Society. Subsequently, three hundred and twenty acres, adjacent to section 16, was donated to the State by the citizens of McLeod County for that purpose. By an act of the Legislature, March 12, 1861, all the swamp lands in McLeod County were reserved and set aside for the use and benefit of the Agricultural College. By the act of Congress, July 2, 1862, donating public lands to such States and Territories as should establish and provide Agricultural Colleges within five years from that date, the State of Minnesota was entitled to one hundred and twenty thousand acres of land. The Legislature accepted this grant for the Agricultural College and the lands were selected and certified to the State. Some of these lands were entered at double the minimum price and so the amount selected and certified was reduced somewhat below one hundred thousand acres. No experiments were ever carried on, nor was any attempt made to give any instruction, by the Agricultural Board who had charge of this College.

The act of Congress, referred to above, is herewith given, in full:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled:

That there be granted to the several States, for the purposes hereinafter mentioned, an amount of public land, to be apportioned to each State a quan-

tity equal to thirty thousand acres, for each Senator and Representative in Congress to which the States are respectively entitled by the apportionment under the census of eighteen hundred and sixty: *Provided*, that no mineral lands shall be selected or purchased under the provisions of this act.

SEC. 2. *And be it further enacted*, That the land aforesaid, after being surveyed, shall be apportioned to the several States in sections or subdivisions of sections, not less than one-quarter of a section; and whenever there are public lands in a State subject to sale at private entry at one dollar and twenty-five cents per acre, the quantity to which said State shall be entitled shall be selected from such lands within the limits of such State, and the Secretary of the Interior is hereby directed to issue to each of the States in which there is not the quantity of public lands subject to sale at private entry at one dollar and twenty-five cents per acre, to which said State may be entitled under the provisions of this act, land scrip to the amount in acres for the deficiency of its distributive share; said scrip to be sold by said States, and the proceeds thereof applied to the uses and purposes prescribed in this act, and for no other use or purpose whatever: *Provided*, That in no case shall any State to which land scrip may thus be issued be allowed to locate the same within the limits of any other State, or of any Territory of the United States, but their assignees may thus locate said land scrip upon any of the unappropriated land of the United States subject to the sale at private entry at one dollar and twenty-five cents, or less, per acre: *And provided further*, That not more than one million acres shall be located by such assignees in any one of the States: *And provided further*, That no such location shall be made before one year from the passage of this act.

SEC. 3. *And be it further enacted*, That all the expenses of management, superintendence, and taxes from the date of selection of said lands, previous to their sales, and all expenses incurred in the management and disbursement of the moneys which may be received therefrom, shall be paid by the States to which they may belong, out of the treasury of said States, so that the entire proceeds of the sale of said lands shall be applied without any diminution whatever to the purposes hereinafter mentioned.

SEC. 4. *And be it further enacted*, That all moneys derived from the sale of the lands aforesaid by the States to which the lands are apportioned, and from the sales of land scrip hereinafter provided for, shall be invested in stocks of the United States, or of the States, or some other safe stocks, yielding not less than five per centum upon the par value of said stocks; and that the money so invested shall constitute a perpetual fund, the capital of which shall remain forever undiminished (except so far as may be provided in section fifth of this act), and the interest of which shall be inviolably appropriated, by each State which may take and claim the benefit of this act, to *the endowment, support and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.*

SEC. 5. *And be it further enacted*, That the grant of land and land scrip hereby authorized shall be made on the following conditions, to which, as well as to the provisions hereinbefore contained, the previous assent of the several States shall be signified by legislative acts:

First. If any portion of the fund invested as provided by the foregoing section, or any portion of the interest thereon, shall, by any action or contingency, be diminished or lost, it shall be replaced by the State to which it belongs, so that the capital of the fund shall remain forever undiminished; and the annual interest shall be regularly applied, without diminution, to the

purposes mentioned in the fourth section of this act, except that a sum not exceeding ten per centum upon the amount received by any State, under the provisions of this act, may be expended for the purchase of lands for sites or experimental farms whenever authorized by the respective Legislatures of said States.

Second. No portion of said fund, nor the interest thereon, shall be applied, directly or indirectly, under any pretense whatever, to the purchase, erection, preservation or repair of any building or buildings.

Third. Any State which may take and claim the benefit of the provisions of this act, shall provide, within five years, at least, not less than one college, as described in the fourth section of this act, or the grant to such State shall cease, and said State shall be bound to pay the United States the amount received of any lands previously sold, and that the title to purchasers under the State shall be valid.

Fourth. An annual report shall be made regarding the progress of each college, recording any improvements and experiments made, with their cost and results, and such other matters, including State industrial and economical statistics, as may be supposed useful; one copy of which shall be transmitted by mail free, by each to all other colleges which may be endowed under the provisions of this act, and also one copy to the Secretary of the Interior.

Fifth. When lands shall be selected from those which have been raised to double the minimum price, in consequence of railroad grants, they shall be computed to the State at the maximum price, and the number of acres proportionally diminished.

Sixth. No State while in a condition of rebellion or insurrection against the government of the United States shall be entitled to the benefit of this act.

Seventh. No State shall be entitled to the benefits of this act unless it shall express its acceptance thereof by its Legislature within two years from the date of its approval by the President.

SEC. 6. *And be it further enacted,* That land scrip issued under the provisions of this act shall not be subject to location until after the first day of January, one thousand eight hundred and sixty-three.

SEC. 7. *And be it further enacted,* That the land officers shall receive the same fees for locating land scrip issued under the provisions of this act as is now allowed for the location of military bounty land warrants under existing laws; *Provided,* Their maximum compensation shall not be thereby increased.

SEC. 8. *And be it further enacted,* That the Governors of the several States to which scrip shall be issued under this act, shall be required to report annually to Congress all sales made of such scrip until the whole shall be disposed of, the amount received for the same, and what appropriation has been made of the proceeds.

The University dates its actual beginning from the act of February 18th, 1868. One of the first acts of the Regents under this new organization was the purchase of a farm for the Agricultural College. In September, 1868, a purchase of ninety-six acres was made. This land was situated southeast of the campus and only one-fourth of a mile from it.

In the report made by the Board of Regents, for the fiscal year ending December 22, 1868, it appears that there were then five instructors employed and one hundred and nine students in attendance, all in the Preparatory Department.

The year of 1869 marks the organization of the University proper; the election of William W. Folwell as President; the

selection of a faculty; the beginning of University instruction, and the enlargement of the University farm by the purchase of thirty acres of land. There were in attendance, during this year, thirteen students in the Collegiate Department and two hundred and seventeen in the Latin or Preparatory School.

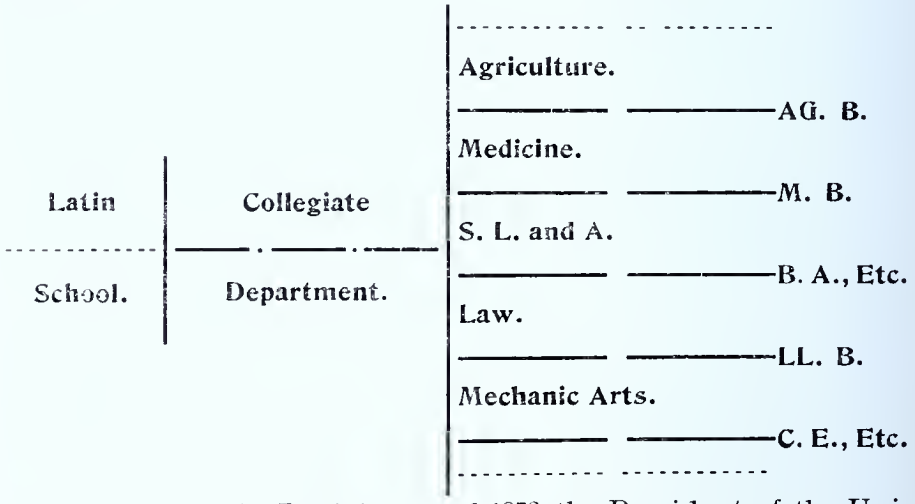
The organization adopted by the Board of Regents, as required by law, was as follows:

"A Department of Elementary Instruction;
"A College of Science, Literature and the Arts;
"A College of Agriculture and the Mechanic Arts;
"A College or Department of Medicine;
"A College or Department of Law."

The College of Agriculture and the Mechanic Arts was organized in two divisions, (1) that of Agriculture, (2) that of Mechanic Arts.

The Department of Elementary Instruction was represented by the Collegiate Department and the so-called Latin School, introductory to it.

The following diagram suggests the relation of the departments:



By an act of the Legislature of 1872, the President of the University was constituted an *ex-officio* member of the Board of Regents. The Regents were also empowered to dispense with the Elementary Department of the University at their discretion. The same Legislature, March 1, 1872, also passed the following act providing for a Geological and Natural History Survey, which was entrusted to the Regents of the University.

Be it enacted by the Legislature of the State of Minnesota:

SECTION 1. It shall be the duty of the Board of Regents of the University of Minnesota to cause to be begun as soon as may be practicable, and to carry on a thorough Geological and Natural History Survey of the State.

SEC. 2. The Geological Survey shall be carried on with a view to a complete account of the Mineral Kingdom as represented in the State, including the number, order, dip and magnitude of the several Geological strata, their richness in ores, corals, clays, peats, salines and mineral waters, marls, cements, building stones and other useful materials, the value of said substances for economical purposes and their accessibility; also an accurate chemical analysis of the various rocks, soils, ores, clay, peats, marls and other mineral substances, of which complete and exact records shall be made.

SEC. 3. The Natural History Survey shall include, first, an examination of the vegetable productions of the State, embracing all trees, shrubs, herbs and grasses native or naturalized in the State; second, a complete and scientific account of the Animal Kingdom as properly represented in the State, including all mammalia, fishes, reptiles, birds and insects.

SEC. 4. The said surveys and examinations shall be made in the manner and order following: First, the Geological survey proper, together with the necessary and applied mineralogical investigations, all of which shall be undertaken as soon as may be practicable, and be carried forward with such expedition as may be consistent with economy and thoroughness; second, the botanical examination; third, zoological investigations, *provided,* however, that whenever the said Board of Regents may find it most economical to prosecute different portions of the surveys in conjunction, or that the public interest demands it, they may, in their discretion, depart from the above prescribed order. And in the employment of assistants in the said surveys the said Board of Regents shall at all times give the preference to the students and graduates of the University of Minnesota, *provided* the same be well qualified for the duties.

SEC. 5. The said Board of Regents shall also cause to be collected and tabulated such meteorlogical statistics as may be needed to account for the varieties of climate in the different parts of the State; also the cause to be ascertained [by] barometrical observation or other appropriate means the relation, elevations and depressions of the different parts of the State; and also on or before the completion of the said surveys, to cause to be compiled from such actual surveys and measurements as may be necessary, an accurate map of the State, which map, when approved by the Governor, shall be the official map of the State.

SEC. 6. It shall be the duty of said Board of Regents to cause proper specimens, skillfully prepared, secured and labelled of all rocks, soils, ores, coals, fossils, cements, building stones, plants, woods, skins and skeletons of animals, birds, insects and fishes, and other mineral, vegetable and animal substances and organisms discovered or examined in the courss of said surveys, to be preserved for public inspection free of cost, in the University of Minnesota, in rooms convenient of access and properly warmed, lighted, ventilated and furnished, and in charge of a proper scientific curator; and they shall also, whenever the same may be practicable, cause duplicates in reasonable numbers and quantities of the above named specimens, to be collected and preserved for the purpose of exchanges with other State Universities and scientific institutions, of which latter the Smithsonian Institute at Washington shall have the preference.

SEC. 7. Said Board of Regents shall cause a Geological map of the State to be made, as soon as may be practicable, upon which, by colors and other appropriate means and devices, the various Geological formations shall be represented.

SEC. 8. It shall be the duty of the said Board of Regents, through their President, to make, on or before the second Tuesday in December in each and every year, a report showing the progress of the said surveys, accompanied by such maps, drawings and specifications as may be necessary and proper to exemplify the same to the Governor, who shall lay the same before the

Legislature; and the said Board of Regents, upon the completion of any separate portion of the said surveys, to cause to be prepared a memoir or final report, which shall embody in a convenient manner all useful and important information accumulated in the course ot the investigation of the particular department or portion, which report or memoir shall likewise be communicated through the Governor to the Legislature.

SEC. 9. To carry out the provisions of this act the sum of one thousand dollars per annum is hereby appropriated, to be drawn and expended by the [said] Board of Regents of the University of Minnesota.

SEC. 10. This act shall take effect and be in force from and after its approval.

Approved March 1, 1872.

The Legislature of 1873 appropriated $50,000 for the erection of buildings on the Campus. Plans were immediately secured for main part of the structure which is now known as the "main" building, and also for the Agricultural building which was destroyed by fire some years ago. These buildings were completed ready for occupation in the fall of 1876.

The year 1873 was signalized by the graduation of the first class, which consisted of two young men who had completed the classical course.

Upon recommendation of the Board of Regents the Legislature made appropriations for the enlargement of the Campus as follows: In 1877, $18,000; in 1879, $20,000; in 1881, $30,000. These appropriations enabled the Regents to buy about twenty acres of land, so that the Campus now comprises about forty-five acres.

Upon recommendation of the State Horticultural Society the Legislature appropriated, March 8, 1878, the sum of two thousand dollars for the purchase of one hundred and sixteen acres of land at Lake Minnetonka as an experimental farm for fruit culture. The act making this appropriation also provided that this farm should be under the control of the Board of Regents.

Upon application of the Board of Regents the Legislature of 1881 passed an act authorizing the sale of the old Experimental Farm and the investment of the proceeds in a new farm more suited to the carrying on of experiments. A sale was effected and the purchase made, netting the University a considerable sum besides giving it a farm better suited to its needs.

The following act providing for an Agricultural Experiment Station was passed by the Legislature of 1885:

"SECTION 1. It shall be the duty of the Board of Regents of the University of Minnesota, as soon as practicable after the passage of this act, to establish at said University an Agricultural Experiment Station for the purpose of promoting agriculture in its various branches by scientific investigation and experiments; which station shall be under the control and supervision of the said Board of Regents."

SEC. 2. This act shall take effect and be in force from and after its passage.

Approved March 7, 1885.

In the year 1887 the Congress of the United States passed an act, popularly known as the "Hatch Bill," of which the following are the essential sections:

An act to establish Agricultural Experiment Stations in connection with the colleges established in the several States under the provisions of an act approved July second, eighteen hundred and sixty-two, and of the acts supplementary thereto.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That in order to aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and application of agricultural science, there shall be established, under direction of the college or colleges or agricultural department of colleges in each State or Territory established, or which may hereafter be established, in accordance with the provisions of an act approved July second, eighteen hundred and sixty-two, entitled "An act donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," or any of the supplements to the said act, a department to be known and designated as an "Agricultural Experiment Station:" *Provided,* That in any State or Territory in which two such colleges have been or may be so established the appropriation hereinafter made to such State or Territory shall be equally divided between such colleges, unless the Legislature of such State or Territory shall otherwise direct.

SEC. 3. That it shall be the object and duty of said Experiment Stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and waters; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic question involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective States and Territories.

SEC. 4. That bulletins or reports of progress shall be published at said stations at least once in three months, one copy of which shall be sent to each newspaper in the States or Territories in which they are respectively located, and to such individuals actually engaged in farming as may request the same, and as far as the means of the station will permit. Such bulletins or reports and the annual reports of said stations shall be transmitted in the mails of the United States free of charge for postage, under such regulations as the Postmaster General may from time to time prescribe.

SEC. 5. That for the purpose of paying the necessary expenses of conducting investigations and experiments and printing and distributing the results as hereinbefore described, the sum of fifteen thousand dollars per annum is hereby appropriated to each state, to be specially provided for by Congress in the appropriations from year to year, and to each Territory entitled under the provisions of section eight of this act, out of any money in the Treasury proceeding from the sales of public lands, to be paid in equal quarterly payments, on the first day of January, April, July and October in

each year, to the treasurer or other officer duly appointed by the governing boards of such colleges to receive the same, the first payment to be made on the first day of October, eighteen hundred and eighty-seven. *Provided, however,* That out of the first annual appropriation so received by any station an amount not exceeding one-fifth may be expended in the erection, enlargement, or repair of a building or buildings necessary for carrying on the work of such station; and thereafter an amount not exceeding five per centum of such annual appropriation may be so expended.

Approved March 2, 1887.

It will be noted that the act of Congress of 1862 was designed to promote Agricultural *Edueation*, while that of 1887 provides for Agricultural *Investigation.*

The University receives from the State, by direct appropriation, sixty-five thousand dollars annually, provided for in the following acts:

Be it enacted by the Legislature of the State of Minnesota:

That the sum of forty thousand dollars, or so much thereof as may be necessary, be and the same is hereby appropriated in addition to the incomes from the permanent University fund, from the general revenue fund, for the support of the State University for the fiscal year ending July thirty-one, one thousand eight hundred and eighty-one, and annually thereafter.

This act shall take effect and be in force from and after its passage.

Approved March 8, 1887.

Be it enacted by the Legislature of the State of Minnesota:

For additional allowance for the general expenses for the support of the State University, twenty-five thousand dollars.

Approved April 24, 1889.

The legislature of 1893 passed an act, giving to the University a State tax of three-twentieths of a mill. This act goes into effect on and after the first day of August, 1894, and will take the place of the two appropriation acts as given above.

The government of the University is vested in a board of twelve Regents; nine of these members are appointed by the Governor of the State and confirmed by the Senate, and hold office for six years. The other three members are, *ex-officio*, the Governor of the State, the State Superintendent of Public Instruction and the President of the University. This board has complete control over everything connected with the University.

The General Faculty of the University has control of all matters pertaining to the department of Elementary Instruction, and have power to direct and control all the general interests pertaining to the internal affairs of the University (subject to the revision of the Board of Regents, to whom the action of the Faculty upon all important matters shall from time to time be submitted), except so far as said interests may fall under the supervision of the Special Faculties.

The several Special Faculties of the University shall have control and direction of the interests of their respective colleges or departments, except such matters as may be relegated to the General Faculty by the by-laws or by the Board of Regents.

The President of the University is the presiding officer of all the Faculties, but in his absence the senior professor present shall preside.

In the respective Faculties a majority of the votes constitutes a quorum, and upon call of any member the ayes and noes must be counted and entered upon the records.

The President of the University, as the chief executive officer of the University, sees that all the laws and regulations of the Board of Regents for the government of the University, and all the rules and regulations of the several Faculties in accordance therewith, are carefully executed; in all cases when an emergency arises in the administration of the affairs of the University, the President may, in his discretion, adopt such measures as he deems expedient and necessary for the best interests of the University; he may keep and use an official seal, and appoint a secretary; he communicates to any Faculty any information they may require; unless in his opinion the interests of the University demand that it be withheld; he edits and publishes the Annual Catalogue, subject to the revision of the Executive Committee of the Board of Regents; and performs such other duties consistent with his office as the Board of Regents may prescribe.

Whenever the action of any Faculty is, in the judgment of the President of the University, at variance with the plans and policy of the Board of Regents, or otherwise prejudicial to the welfare of the University, and he shall so declare in writing to the Secretary of said Faculty, the said action shall not take effect until it shall have been submitted to the Board of Regents, and shall have been approved by them; and it is the duty of the President of the University promptly to make a full report of the transaction, together with the reasons for his action, to the President of the Board of Regents.

The professors have general superintendence of everything pertaining to instruction in their respective departments, and are responsible for the successful management of them; each professor has control and charge of the special apparatus of his department, and is responsible for the same.

Assistant professors and other instructors are responsible for the order and progress of their respective classes.

The order of the seniority of professors and assistant professors is determined by the dates of their first elections.

Such general devotional exercises are held in the University as the General Faculty directs.

The punishments used in the University are warnings or reprimands in private, in presence of the offender's class or section, or in public; suspension, indefinitely or for a stated time, by the President, or by order of a Faculty; expulsion by vote of the

General Faculty; and reduction to the ranks, of officers and non-commissioned officers in the Military Corps. In case of suspension the student has the right of appeal to the General Faculty within twenty days after notice of suspension.

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The HON. DAVID L. KIEHLE, LL. D., ST. PAUL, - - *Ex-Officio.*
The State Superintendent of Public Instruction.
CYRUS NORTHROP, LL. D., MINNEAPOLIS, - - - - *Ex-Officio.*
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Faculty and Instructors.

CYRUS NORTHROP, LL. D., President, 519 Tenth Avenue S. E.

WILLIAM W. FOLWELL, LL. D., 1020 Fifth Street S. E.
Professor of Political Science and Lecturer on International Law, and Librarian.

JABEZ BROOKS, D. D., Minneapolis.
Professor of the Greek Language and Literature.

NEWTON H. WINCHELL, M. A., 120 State Street S. E.
Professor of Geology and Mineralogy, in charge of the Geological Survey. Curator of the General Museum.

CHARLES N. HEWITT, M. D., St. Paul.
University Professor of Sanitary Science.

JOHN G. MOORE, B. A., 2810 University Avenue S. E.
Professor of the German Language and Literature.

CHRISTOPHER W. HALL, M. A., 803 University Avenue S. E.
Professor of Geology and Mineralogy; Assistant Curator of the Museum; Dean of the College of Engineering, Metallurgy and the Mechanic Arts.

JOHN C. HUTCHINSON, B. A., 3806 Blaisdell Avenue.
Associate Professor of Greek.

JOHN S. CLARK, B. A., Minneapolis.
Professor of the Latin Language and Literature.

MATILDA J. WILKIN, M. L., Minneapolis.
Assistant Professor of English and German.

JOHN F. DOWNEY, M. A., C. E., 1126 Fifth Street S. E.
Professor of Mathematics and Astronomy.

WILLIAM A. PIKE, B. S., 2525 University Avenue S. E.
Lecturer in Mechanical Engineering.

JAMES A. DODGE, Ph. D., 813 Fifth Street S. E.
Professor of Chemistry.

MARIA L. SANFORD, 1409 Sixth Street S. E
Professor of Rhetoric and Elocution.

CHARLES W. BENTON, B. A., Minneapolis.
Professor of the French Language and Literature.

O. J. BREDA, Minneapolis.
Professor of the Scandinavian Languages and Literatures.

GEORGE EDWIN MACLEAN, Ph. D., 328 Tenth Avenue S. E.
Professor of the English Language and Literature.

CHARLES F. SIDENER, B. S., 1316 Fifth Street S. E.
Assistant Professor of Chemistry.

HENRY F. NACHTRIEB, B. S., 518 Twelfth Avenue S. E.
Professor of Animal Biology and Zoölogist of the Geological and Natural History Survey.

FREDERICK S. JONES, B. A., 520 Twelfth Avenue S. E.
Professor of Physics.

WILLIAM R. HOAG, C. E., 1516 Seventh Street S. E.
Professor of Civil Engineering.

CONWAY MACMILLAN, M. A., Minneapolis.
Professor of Botany and Botanist of the Geological and Natural History Survey.

HENRY T. ARDLEY, 1521 University Avenue S. E.
Principal of the School of Design.

WILLISTON S. HOUGH, Ph. M., 11 Florence Court.
Professor of Philosophy.

HON. WILLIAM S. PATTEE, LL. D., 1319 Fifth Street S. E.
Dean of the Department of Law and Professor of the Law of Contracts.

FRANK B. KELLOGG, Merchant's National Bank, St. Paul.
Lecturer on Equity Jurisprudence and Procedure.

CHARLES A. WILLARD, LL. B., 14 Thirteenth Street N.
Lecturer on the Law of Bailments.

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Lecturer on Constitutional Jurisprudence and History.

HON. C. D. O'BRIEN, 20 Globe Building, St. Paul.
Lecturer on Criminal Law and Procedure.

CHARLES W. BUNN, LL. B., Metropolitan Opera House, St. Paul.
Lecturer on Suretyship and Mortgages and Practice in the United States Courts.

HON. GEORGE B. YOUNG, A. M., LL. B., 249 Gilfillan Block, St. Paul.
Lecturer on the Conflict of Laws.

SELDEN BACON, LL. B., 1402 Nicollet Avenue.
Lecturer on Civil Procedure, including Evidence.

CHAS. B. ELLIOTT, Ph. D., 1128 Fourth Street S. E.
Lecturer on Corporations and Insurance.

HON. JOHN DAY SMITH, 2720 Pillsbury Avenue.
Lecturer on American Constitutional Law.

HON. H. F. STEVENS, 202 Pioneer Press Building, St. Paul.
Lecturer on the Law of Real Property.

T. DWIGHT MERWIN, A. B., St. Paul.
Lecturer on Patent Law.

JAMES PAIGE, LL. B., 1414 Yale Place.
Lecturer on Domestic Relations, and Quiz Master.

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Lecturer on Taxation and Torts.

PERRY H. MILLARD, M. D., 326 Wabasha Street, St. Paul.
Dean of the Department of Medicine and Surgery; Professor of the Principles of Surgery and Medical Jurisprudence.

RICHARD O. BEARD, M. D., 1623 Laurel Avenue.
Professor of Physiology.

C. J. BELL, A. B., 514 Tenth Street S.
Professor of Chemistry.

H. M. BRACKEN, M. D., 1010 Fourth Street S. E.
Professor of Materia Medica and Therapeutics.

CHARLES H. HUNTER, A. M., M. D., 829 Second Avenue S.
Professor of the Theory and Practice of Medicine.

EVERTON J. ABBOTT, A. B., M. D., 399 Endicott Arcade, St. Paul.
Associate Professor of Practice.

CHARLES A. WHEATON, M. D. 326 Wabasha Street, St. Paul.
Professor of the Practice of Surgery and Clinical Surgery.

FREDERICK A. DUNSMOOR, M. D., 226 Tenth Street S.
Professor of Clinical and Operative Surgery.

PARKS RITCHIE, M. D., 241 E. Seventh Street, St. Paul.
Professor of Obstetrics.

ALEX. J. STONE, M. D., LL. D., 358 Market Street, St. Paul.
Professor of Diseases of Women.

JOHN F. FULTON, Ph. D., M. D., 326 Wabasha Street, St. Paul.
Professor of Opthalmology, Otology and Hygiene.

FRANK ALLPORT, M. D., West Hotel.
Clinical Professor of Opthalmology and Otology.

C. EUGENE RIGGS, A. M., M. D., 485 Endicott Arcade, St. Paul.
Professor of Nervous and Mental Diseases.

AMOS W. ABBOTT, M. D., 21 Tenth Street S.
Clinical Professor of Diseases of Women.

JAMES H. DUNN, M. D., 104 Royalston Avenue.
Professor of Diseases of the Genito-Urinary Organs.

CHARLES L. WELLS, A. M., M. D., 1010 Nicollet Avenue.
Professor of Diseases of Children.

JAMES E. MOORE, M. D., Hotel Clinton.
Professor of Orthopædic Surgery.

M. P. VANDERHORCK, M. D., 528 Fourteenth Avenue S. E.
Professor of Diseases of the Skin.

W. S. LATON, M. D., West Hotel.
Professor of Diseases of the Throat and Nose.

J. CLARK STEWART, B. S., M. D., 1628 Fifth Avenue S.
Professor of Pathology.

J. W. BELL, M. D., 2655 Chicago Avenue.
Professor of Physical Diagnosis and Clinical Medicine.

A. B. CATES, A. M., M. D., 1604 Chicago Avenue.
Adjunct Professor of Obstetrics.

A. MCLAREN, A. B., M. D., 326 Wabasha Street, St. Paul.
Adjunct Professor of Gynecology.

W. A. JONES, M. D., 2202 Second Avenue S.
Adjunct Professor of Nervous and Mental Diseases.

WILLIAM E. LEONARD, A. B., M. D., 1809 Portland Avenue.
Professor of Materia Medica and Therapeutics in the College of Homeopathic Medicine and Surgery.

HENRY HUTCHINSON, M. D., Germania Life Building, St. Paul.
Professor of Theory and Practice of Medicine in the College of Homeopathic Medicine and Surgery.

GEORGE E. RICKER, A. B., M. D., 3011 First Avenue S.
Professor of Clinical Medicine and Dermatology in the College of Homeopathic Medicine and Surgery.

ROBERT D. MATCHAN, M. D., 2807 Lyndale Avenue S.
Professor of Principles and Practice of Surgery in the College of Homeopathic Medicine and Surgery.

HENRY C. LEONARD, B. C. E., B. S., M. D., 1527 Sixth Street N.
Professor of Obstetrics in the College of Homeopathic Medicine and Surgery.

ALBERT E. HIGBEE, M. D., 716 Third Avenue S.
Clinical Professor of Gynecology in the College of Homeopathic Medicine and Surgery.

JOHN F. BEAUMONT, M. D., 607 Second Avenue S.
Professor of Opthalmology in the College of Homeopathic Medicine and Surgery.

HENRY W. BRAZIE, M. D., 415 Tenth Street S.
Dean of the College of Homeopathic Medicine and Surgery and Professor of Pædology.

A. P. WILLIAMSON, A. M., M. D., 608½ Nicollet Avenue.
Professor of Diseases of the Nervous System in the College of Homeopathic Medicine and Surgery.

WARREN S. BRIGGS, B. S., M. D., 583 Endicott Arcade, St. Paul.
Professor of Clinical and Orthopædic Surgery in the College of Homeopathic Medicine and Surgery.

EUGENE L. MANN, A. B., M. D., 13 Germania Bank Building, St. Paul.
Professor of Laryngology and Diseases of the Heart and Lungs in the College of Homeopathic Medicine and Surgery.

B. HARVEY OGDEN, A. M., M. D., 13 Germania Bank Building, St. Paul.
Professor of Gynecology and Genito-Urinary Diseases in the College of Homeopathic Medicine and Surgery.

HENRY C. ALDRICH, D. D. S., M. D., 85 Ninth Street S.
Adjunct Professor of Materia Medica and Therapeutics in the College of Homeopathic Medicine and Surgery.

D. A. STRICKLER, M. D., 278 Endicott Arcade, St. Paul.
Professor of Otology and Rhinology in the College of Homeopathic Medicine and Surgery.

CHAS. M. BAILEY, D. M. D., 318 Fourth Street S. E.
Professor of Prosthetic Dentistry, Orthodontia and Metallurgy.

THOMAS E. WEEKS, D. D. S., 2420 Sixth and One-Half Avenue S.
Professor of Operative Dentistry and Dental Anatomy.

GEORGE A. HENDRICKS, M. S., M. D., Guaranty Loan Building.
Professor of Anatomy.

W. XAVIER SUDDUTH, A. M., M. D., D. D. S., 1206 Fourth Street S. E.
Dean of the College of Dentistry and Professor of Embryology, Pathology and Oral Surgery.

SAMUEL B. GREEN, B. S., St. Anthony Park.
Professor of Horticulture and Horticulturist of the Experiment Station.

OTTO LUGGER, St. Anthony Park.
Entomologist and Botanist of the Experiment Station and Professor of Entomolgy.

W. W. PENDERGAST, St. Anthony Park.
Principal of the School of Agriculture and Instructor in Physics and Physical Geography.

HENRY W. BREWSTER, PH. D., St. Anthony Park.
Assistant Principal of the School of Agriculture and Assistant Professor of Mathematics.

CLINTON D. SMITH, M. S., St. Anthony Park.
Director of the Experiment Station and Professor of Dairy Husbandry in charge of the Professorship of Agriculture.

HARRY E. SMITH, M. E., 1520 Seventh Street S. E.
Assistant Professor of Mechanical Engineering.

GEORGE D. SHEPARDSON, A. M., M. E., 510 Thirteenth Avenue S. E.
Professor of Electrical Engineering.

GEORGE H. MORGAN, Lieutenant U. S. A., 139 Seventeenth Street N.
Professor of Military Science and Tactics.

HARRY SNYDER, B. S., St. Anthony Park.
Chemist of the Experiment Station and Professor of Agricultural Chemistry.

WILLIAM P. DICKINSON, D. D. S., Minneapolis.
Professor of Dental Therapeutics and Crown and Bridge Work.

WILLIAM R. APPLEBY, B. A., 911 Fifth Street S. E.
Professor of Mining and Metallurgy.

THOMAS G. LEE, A. M., M. D., Minneapolis.
Professor of Embryology, Histology and Bacteriology.

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FREDERICK J. WULLING, PH. G., Minneapolis.
Dean and Professor of the Theory and Practice of Pharmacy.

DAVID L. KIEHLE, LL. D., 2801 Portland Avenue.
Lecturer on Pedagogy.

SAMUEL G. SMITH, D. D., St. Paul.
Lecturer on Sociology.

FRANCIS P. LEAVENWORTH, M. A., Minneapolis.
Assistant Professor of Astronomy.

CHRISTOPHER GRAHAM, B. S., V. M. D., St. Anthony Park.
Veterinarian of the Experiment Station and Instructor in Veterinary Medicine and Surgery in the School of Agriculture.

JOEL E. WADSWORTH, C. E., Minneapolis.
Assistant Professor of Civil Engineering in charge of Mechanics and Structural Engineering.

INSTRUCTORS AND ASSISTANTS.

CHARLES R. ALDRICH, St. Anthony Park.
Instructor in Drawing and Manual Training in the School of Agriculture.

KENDRICK CHARLES BABCOCK, B. L., 316 Fifteenth Avenue S. E.
Instructor in History and English.

JOSEPH BROWN PIKE, M. A., Minneapolis.
Instructor in Latin and French.

E. EUGENE MCDERMOTT, M. S., 1411 Sixth Street S. E.
Instructor in Elocution.

OSCAR FIRKINS, B. A., 1530 Fourth Street S. E.
Assistant in Rhetoric.

AMELIA I. BURGESS, 60 Island Avenue.
Instructor in Freehand Drawing and Design.

WILLIAM ROBERTSON, B. S., St. Anthony Park.
Instructor in Physics and Language in the School of Agriculture.

OSCAR W. OESTLUND, M. A., 506 Oak Street S. E.
Assistant in Animal Biology.

J. A. VYE, St. Anthony Park.
Instructor in Penmanship and Accounts in the School of Agriculture, and Secretary of the Experiment Station.

CHARLES L. GREENE, M. D., 326 Wabasha Street, St. Paul.
Lecturer on Surgical Anatomy.

MARIE SCHÖN, Minneapolis.
Instructor in German.

JAMES M. TATE, Minneapolis.
Instructor in Wood Work.

FRANK BURTON, M. D., Minneapolis.
Demonstrator of Anatomy.

H. L. STAPLES, A. M., M. D., Minneapolis.
Instructor in Medical and Pharmaceutical Latin.

J. A. NESS, M. A., Minneapolis.
Instructor in Scandinavian and Latin.

T. L. HAECKER, St. Anthony Park.
Instructor in Breeding and Dairying in the School of Agriculture.

HARRY W. JONES, Minneapolis.
Instructor in Architecture.

JOHN ZELENY, B. S., Minneapolis.
Instructor in Physics.

JAMES H. GILL, B. M. E., Minneapolis.
Instructor in Iron Work.

LOUISE KIEHLE, Minneapolis.
Instructor in Physical Culture.

A. D. MEEDS, B. S., Minneapolis.
Instructor in Chemistry.

CATALINA DE ALCALA, B. L. Minneapolis.
Instructor in the Spanish Language and Literature.

HANNAH R. SEWALL, B. A., St. Anthony Park.
Assistant in Political Science and Rhetoric.

F. E. TWITCHELL, D. M. D., Minneapolis.
Instructor in Continuous-Gum Work.

MILAND AUSTIN KNAPP, D. D. S., Minneapolis.
Instructor in Orthodontia Technics.

J. D. JEWETT, D. D. S., Minneapolis.
Instructor in the Administration of Anesthetics.

FORREST HOY ORTON, D. D. S., St. Paul.
Instructor in Cleft-Palate Appliances.

F. B. KREMER, D. D. S., Minneapolis.
Demonstrator in Charge of the Prosthetic Laboratory.

UNIVERSITY SCHOLARS.

Giving Instruction and Assisting in Laboratories.

In Geology—Frederick W. Sardeson, M. S.
In Mineralogy—Charles P. Berkey, B. S.
In Chemistry—Asa J. Hammond, B. A.
In Histology—George D. Head, B. S.
In Greek—C. Everett Conant, B. A.
In English—Catherine Comfort, B. L., W. H. A. Rutherford, B. L.
In Botany—Albert Schneider, M. D., Caswell A. Ballard.
In Mechanical Drawing—George B. Cooper.
In Pharmacy—Lucy H. A. Blanchard.
In Mathematics—Benjamin F. Groat.
In Freehand Drawing—Laura M. Dennison.
In Physiology—Arthur L. Turner.
In Dentistry—G. S. Monson.
In Pathology—Thomas B. Hartzell.
In Mining and Metallurgy—Peter Christianson, B. S.
In Medical Chemistry—E. W. Danner.

Material Equipment.

LANDS.

The Campus is situated in the city of Minneapolis, about a mile below and in full view of the Falls of St. Anthony. The grounds are about fifty-five acres in extent, undulating in surface, well wooded with native trees, and by reason of the natural advantages and contour, very attractive; it is valued at $600,000.

The Experimental Farm, consisting of two hundred and fifty acres of valuable land, is located between St. Paul and Minneapolis, adjoining the State Fair grounds. It contains every variety of soil and exposure required for illustrative and experimental work; it is valued at $500,000.

The Minnetonka Experimental Fruit Farm of one hundred and sixteen acres and situated on the peninsula dividing the upper and lower lakes, is valued at $12,000.

Of the lands granted by Congress, the University still possesses about sixty-seven thousand acres. These lands are constantly increasing in value and when sold the proceeds will go to increase the permanent endowment of the University.

BUILDINGS:

ON THE CAMPUS.

The Main or Academic building was completed in 1875. It is built of blue sandstone and is a three-story structure with a high basement. It has a frontage of ninety feet and a floor space of about forty thousand square feet. This building is occupied by the general offices of the University, the library, and the recitation rooms of the College of Science, Literature and the Arts.

The Military building was completed in 1884. It is so constructed as to serve both as an auditorium and as a drill hall, and will seat, with comfort, three thousand five hundred people.

The College of Mechanic Arts building was completed in 1886. It is built of red brick with brown stone trimmings, and has a floor space of about twenty thousand square feet, including the one-story wing. It is two stories in height with a high basement. As its name implies, it is occupied by the Engineering Departments.

Pillsbury Hall was completed in 1889. This building is the gift of the Hon. John S. Pillsbury to the University and the State.

It is built of stone, has a frontage of two hundred and forty-five feet, is two stories in height,with a high basement, and has a floor space of forty-one thousand square feet. Besides providing for the museums, it affords ample accommodations for the Departments of Geology, Mineralogy, Animal Biology, Botany, Mining and Metallurgy, and for the Geological and Natural History Survey.

The Chemical and Physical Laboratory building was completed in 1890. It is built of Roman brick with red sandstone basement, has a frontage of one hundred and ninety feet and has a total floor space of about forty thousand square feet. This building furnishes accommodations for the Department of Chemistry, Physics and Electrical Engineering

The Law building was completed in 1889. It is built of red brick with red sandstone trimmings and has a frontage of eighty feet, with a floor space of nineteen thousand square feet. It contains the offices of the Dean, the library, a large lecture room and several smaller recitation and lecture rooms.

The Medical building was completed in 1892. It is a three-story structure with a high basement. The basement and first story are of red sandstone, the two upper stories are Roman brick. The building has a frontage of one hundred and fifteen feet and a floor space of about twenty-eight thousand feet. Its internal arrangement is such that it affords accommodation for the four colleges composing the Department of Medicine. It has an amphitheatre capable of seating, comfortably, six hundred persons.

The Laboratory building of the Medical Department was completed in 1892. It is a one-story structure with a floor space of about forty-five hundred square feet. This building furnishes accommodations for the Chemical, Histological, Pathological and Pharmaceutical laboratories.

The Heating Plant was completed in 1890. It contains the heating apparatus for all of the buildings on the campus. In the rear of the building is the plant house, which furnishes material for illustration in the instruction in Botany.

The Transit House was completed in 1892. It is a small stone building for the accommodation of transit circle, astronomical clocks, chronograph, etc.

ON THE FARM.

Chemistry Hall contains the chemical laboratory on the first floor, while the second floor is occupied by the lecture and laboratory rooms specially adapted to the instruction and practice of agricultural chemistry.

The Dairy building contains the offices of the experiment corps and the apparatus used for illustrating the teaching and

practice of dairying in the School of Agriculture, and the carrying on of experiments in dairying.

The School building contains the recitation rooms of the School of Agriculture.

The Dormitory contains accommodations for the boarding of the students of the School of Agriculture.

The Farm House contains rooms for a part of the students of the School of Agriculture.

The Barn contains rooms for manual training, farm machinery, silos, root cellars, etc.

The Green House is used for propagating plants to be used in the study of botany and horticulture, and for experimental work in these lines.

The Veterinary Hospital furnishes quarters for sick animals and rooms for clinics and lectures to the students in the School of Agriculture.

LIBRARIES.

The following is a list of the libraries easily accessible to University students:

MINNEAPOLIS.

The University Library	30,000 volumes.
The Public Library	50,000 volumes.
Minneapolis Bar Association Library	9,000 volumes.
Guaranty Loan Law Library	9,000 volumes.
N. Y. Life Insurance Law Library	8,000 volumes.

ST. PAUL.

State Historical Library	53,000 volumes.
State Library	20,000 volumes.
Public Library	32,000 volumes.
Total	211,000 volumes.

The General Library of the University contains about thirty thousand bound volumes, beside many thousand volumes of pamphlets, magazines, reports, etc. About one hundred and twenty periodicals are received regularly by the library, not inclusive of technical magazines and newspapers in English and other languages.

The library is open to students and the public from 8 a. m. to 9 p. m. every day of the University year, except Sundays and legal holidays. Books may be borrowed for home reading, to be kept seventeen days. Reference works and other rare and costly volumes are not allowed to be taken from the library, but may be consulted in the reading room.

Beside the General Library of the University, there are several special libraries, consisting mainly of books of reference and current periodicals relating to technical subjects, in connection

with several of the Departments in Engineering and Botany, Animal Biology, Law and Medicine.

The Law Library contains those English and American reports most frequently cited, digests, dictionaries and a full and excellent selection of standard text books. Additions are being constantly made.

Further facilities are afforded the department by the generous action of the Bar Association of Minneapolis in granting to the students the free use of its extensive and ample library located in Temple Court. It contains all the American reports, state and national, and also the English text books and reports so necessary for the student in his study of fundamental principles of jurisprudence.

The State Library, containing everything which a student would have occasion to consult, is located in the Capitol, St. Paul, and is thus within easy reach of the students.

To all these library facilities must be added the Minneapolis Public Library, which is within easy reach of the University and is opened freely to the students of the University. This library contains over fifty thousand bound volumes; over fourteen hundred of the leading newspapers, magazines and periodicals of the world. A branch of this library is located at the University.

In the same building are to be found the Museum of the Minnesota Academy of Natural Sciences; the Art School of the Minneapolis Society of Fine Arts; the Art Gallery, containing many masterpieces of painting and a large number of casts from antique sculptures.

THE MUSEUMS.

The Museums of the University contain material obtained from various sources arranged with special reference to its use for illustration. Among the more notable collections are the following:

(*a*) In Geology and Mineralogy: the Kunz collection of minerals purchased of Mr. George F. Kunz; several suites of crystalline rocks secured from various sources; the Ward collection of casts, contributed in part by citizens of Minneapolis; collections of the crystalline rocks and economic products of Minnesota gathered by the Geological Survey of the State; a series of the paleozoic fossils of Minnesota and Wisconsin, gathered by the department of geology and mineralogy; a series of thin sections of typical rocks and minerals largely representing Minnesota localities; purchased material comprising crystals, economic minerals and the crystalline rocks.

(*b*) In Zoölogy: a United States Fish Commission collection; all the material collected by the State Zoölogist; a collection of

mounted Minnesota birds representing about one half of the species found in the State; a number of the mammals of the State, and a few from the more Western States; a collection of molluscan shells, corals and other foreign material obtained by purchase, exchange and presentation.

Recently Dr. Thos. S. Roberts, of Minneapolis, has presented his collection of several thousand bird skins to the University to form the nucleus of a collection of special interest to all those interested in the Ornithology of the Northwest. The fishes of the State are also well represented. There is a good collection of the leeches of Minnesota. Other groups of animals are more or less numerously represented, and are receiving annual additions from the Zoölogical Survey.

(*c*) In Botany: the general herbarium, numbering about 62,000 specimens, and comprising the series of plants collected by the State Botanist; an alcoholic collection of material for dissection; a collection of woods of Minnesota; a limited series of Carboniferous and Cretaceous fossil plants including the Lesquereaux collection from the Minnesota River localities.

(*d*) The Museum of Technology: A cabinet of specimens illustrating the products and processes of applied chemistry is being collected by the professor of chemistry, as opportunity offers. The collection embraces fuel, ores, furnace products, textile materials, both raw and manufactured; dye-woods and other materials used in dyeing; specimens illustrating the bleaching and printing of cotton, linen and woolen goods, earthenware, pottery, etc.

(*e*) The Classical Museum, a beginning of which has been made, will comprise all material that may illustrate classical geography, topography, chronology, mythology, archæology and art, such as plans of ancient cities, temples, battle-fields, camps, etc.; busts (original and plaster casts); coins and medals; specimens (original and plaster casts) of ancient sculpture, friezes, capitals, columns, vases, etc.; books and plates of costumes, military weapons, armor, household and agricultural affairs, and naval illustrations, etc.; architecture; ancient books and manuscripts; specimens of inscriptions and implements used in writing and in the arts.

LABORATORIES:

ANIMAL BIOLOGY.

This department occupies rooms in Pillsbury Hall as follows: On the upper floor of the north wing: general laboratory, 47x46 feet; laboratory library, 8x11 feet; photographic rooms, 20x8 feet; apparatus room, 21x9 feet; preparation room, 20x13 feet; lecture room, 35x32 feet; professor's office, 12x11 feet. In the basement:

store room, 14x24 feet, and an aquarium room, 13x20 feet. The total floor space of these rooms is, in round numbers, 4,700 square feet.

The general laboratory has table space around the wall for forty-two students. Each "table" is provided with a double wall locker, and of these thirty-seven are equipped with microscopes and all other necessary apparatus. Besides this table space there are tables in the middle of the room for macroscopic and experimental work that will easily accommodate ten students. More secluded quarters in special rooms can be offered to three or four advanced students.

The department is equipped with thirty-one Zeiss microscopes, five Reichert microscopes, and one large Leitz microscope, dissecting microscopes, several camera lucidas, a large Zeiss micro-photographic outfit, various microscope accessories, four microtomes and accessories, Ziegler wax models, Auzoux papier mache models, skeletons from Ward and Fric, including the beautiful cartilaginous skeletons of Fric's series, several hundred of the Naples Zoölogical Station preparations, two Ludwig kymographs, three moist chambers, four Du Bois Reymond inductoriums, Kühnes artificial eye, a phakoscope and a number of other pieces of apparatus and models pertaining to the eye and the ear, a Ludwig's stromuhr, a Fick's spring manometer, a Thomson's astatic galvanometer, an improved spring myograph, chronographs, Kronecker's interrupter, and a number of other pieces of apparatus in addition to a full line of glassware, reagents and dissecting instruments.

The illustrative material, including charts, is being added to continually.

The department library, including the professor's series of periodicals and books, contains about 1,500 volumes. Among the complete sets of periodicals may be mentioned the Naples Mittheilungen, Zoölogischer Anzeiger, Zoölogischer Jahresbericht, Zoölogische Jahrbucher, Anatomischer Anzeiger, Biologisches Centralblatt, Journal of Morphology, Archives de Biologie, Hoffman and Schwalbe's Jahresberichte, La Cellule, Archives Italiennes de Biologie, Archive für Anatomie und Entwickelungsgeschichte, Tablettes Zoölogiques, Leuckart's Bibliotheca Zoölogica, Insect Life, Centralblatt für Bakteriologie and Parasitenkunde, and Zeitschrift fur Wissenschaftliche Mikroskopie.

BOTANY.

Rooms. The Department of Botany occupies a suite of eight rooms in Pillsbury Hall, viz: (1) a lecture room 34x38 feet; (2) a herbarium and seminar room 33x18 feet; (3) a student's general laboratory 33x52 feet; (4) a physiological laboratory 33x18 feet;

(5) a special laboratory and office 34x21 feet; a dark room 8x8 feet, and a work room 21x34 feet, furnishing in all a floor space of 5,688 feet. In addition there is a plant house 20x40 feet.

FURNITURE. The furniture is antique oak throughout and especially designed for the rooms. The lecture room contains seats for seventy. The lecture desk is 18x3 feet with drawers, cupboards and pneumatic trough. Apparatus for displaying charts, models and lantern projections is provided. The herbarium and seminar room contains seventy-two oak plant cases, modeled somewhat after those in the British museum, together with large seminar tables, smaller work tables, book shelves, etc. The collections of plants number somewhat over 63,000. The general laboratory is furnished with slate-topped, iron-framed truncated microscope tables, a slate-topped chemical desk to accommodate twenty students, apparatus cases, wall lockers, aquaria, etc. The physiological laboratory contains truncated and wall slate-topped microscope tables, evaporating hood, reagent and apparatus cases and wall lockers. The special laboratory is provided with slate-topped wall tables, book shelves, periodical racks, desks, library tables and card catalogues. The work room is fitted with preparation apparatus, shelving, wall tables, pigeon hole cases and a safety vault. All the rooms but the museum are piped for gas and water.

SCIENTIFIC EQUIPMENT. The library contains about 1,500 volumes carefully selected in all lines of botanical investigation. The department receives regularly about sixty special periodicals and has full sets of several—as for example, *Botanisches Zeitung, Pringsheim's Jahrbuch, Linnaea, Flora, Cohn's Beitrage, Annales Jardin Buitenzorg, Ann. Hort. Petropolitani, Annals of Botany, Revue Mycologique, Hedwigia, Grevillea, Revue Generale de Botanique, Berichte der Deutschen Botanischen Gesellschaft* and many others. A set of the *Annales des Sciences Naturelles, Botanique* is accessible at the Public Library delivery station in the academic building. The herbarium is especially full in North American metaspermic plants and fungi. It subscribes for most of the leading *exsiccati*. The general laboratory is fitted with a full stock of best imported glassware, Leitz microscopes giving 50 to 600 diameters, 17 Beck microscopes giving from 70 to 480 diameters, four Bausch and Lomb microscopes giving from 50 to 600 diameters and five Leitz dissecting microscopes. The chemical desk is equipped with necessary glassware and reagents. The physiological laboratory contains glassware, Pfeffer's klinostat, Pfeffer's auxanometer, centrifugal wheels, batteries, mercury baths, Bonnier & Mangin's gasometer, heliostat, Kohl *transpiration-apparat* and other physiological apparatus, together with a full set of

Lautenschlager's bacterioscopic and cultivation ovens, sterilizers, water-baths, serum inspissators, etc. A Climax water motor furnishes power. The special laboratory contains a Becker balance, microtomes after Jung-Thoma, Minot and Schanze, a large Leitz microscope giving from 25 to 2,400 diameters, accessory apparatus, staining and imbedding apparatus, etc.

The plant house adjoins the steam-heating engine house and contains much carefully selected material for equipment in physiological lines and for anatomical work.

CHEMISTRY.

The chemical department has about twenty rooms in the west half of the chemical and physical laboratory building devoted to its use. Of these the most important are the lecture room, the qualitative analytical laboratory, the quantitative analytical laboratory. The lecture room, on the second floor, seats about one hundred persons. It is intended to be used for lectures on general chemistry, with experiments, for which the customary arrangements have been provided. It will also be used as a recitation room for large classes. The qualitative analytical laboratory, on the second floor, has work tables for the accommodation of forty students. Water, gas and other facilities are arranged for convenient use. This room, as the name implies, is designed for practice in qualitative analysis. It will also, at different hours of the day, be used for instruction in certain parts of general chemistry. Immediately connected with this room, and to be used in the same work, are three small rooms, namely, a spectroscope room, a microscope room, and a room for storing glassware and other apparatus. The quantitative analytical laboratory, on the first floor, contains work tables for thirty-two students. It is intended for chemical work of the upper classes, who have already pursued the course in general chemistry and qualitative analysis. Immediately connected with this room are a balance room and apparatus room.

On the first floor is a recitation room for classes of moderate size. It is also fitted with arrangements for lectures with demonstrations. Other rooms on the first floor are: a room for water analysis, a private laboratory for the professor, and a private laboratory for the assistant professor.

Rooms additional to those mentioned on the second floor are: a preparation room, near the lecture room, and intended for keeping the apparatus used in lectures and for preparing the experiments for the day, and a room for the technological museum, furnished with large cases of shelves and drawers.

In the basement the department has two rooms opening into each other, for an organic analytical laboratory, a room for gas

analysis, and a balance room. In addition there are in the basement a room for furnace work, a store room for chemicals, and a store room for glassware.

The rooms of the chemical department are well furnished with fixtures, apparatus and material for the use of students and instructors in the various branches of chemical practice and investigation.

CHEMISTRY, IN THE MEDICAL DEPARTMENT.

The main laboratory occupies the west end of the laboratory building and has a floor space of about fifteen hundred square feet, well lighted on both sides. On each side of a central aisle are arranged working tables for seventy-two students, the number which can work at one time. Each working place is provided with three cupboards, allowing two hundred and sixteen students to work in three divisions. In the middle of the aisle are two hoods, having a total length of thirty-two feet of working space, providing ample room for operations giving off offensive odors. Convenient to the hoods and desks are sinks and water. The customary reagent bottles and apparatus are provided for one hundred and forty-four students in the courses of general chemistry, qualitative analysis and the analysis of the urine.

Adjoining the main laboratory is a preparation room with a floor space of two hundred and twenty-five square feet, supplied with apparatus and chemicals and designed for making reagents and distilled water.

In the second story is a store room for apparatus and chemicals, the office of the professor and the private laboratory, occupying a floor space, in all, of about three hundred and fifty square feet.

The chemical lecture room is situated in the main medical building. The lecture room itself is used in common with other branches. Separated from it by a rolling curtain is the lecture table and preparation room, which is well supplied with the usual experimental apparatus.

GEOLOGY AND MINERALOGY.

These laboratories occupy rooms on the first floor and basement of Pillsbury Hall. They are large and perfectly lighted, and the lecture room is well furnished for illustration.

The field work carried on under the department is bringing in large quantities of material, the minerals, rocks and fossils of Minnesota and the neighboring states; a system of exchanges is adding largely to the material from more distant localities, and a constantly increasing series of thin sections, both of rocks and fossils, is being prepared. The illustrative material is being arranged into study collections.

These study collections embrace the following:

1. A series of crystals illustrating the six crystal systems.
2. A collection of minerals of the native elements and of the sulphide group.
3. A general collection of the more common minerals.
4. A representative collection of the clastic and crystalline rocks.
5. A collection of Paleozoic fossils, particularly those of our own state and their allies. A good series of charts and other illustrative material accompanies the fossils.

The department possesses a very complete outfit of instruments for the study of physical mineralogy and lithology. The list embraces some of the finest instruments made for optical investigations and axial measurements. Determinative mineralogy is carried on through quantitative determination—assaying of gold, silver, lead, copper, etc.

The rooms occupied by the department measure about six thousand square feet of floor space and are very thoroughly equipped, not only for undergraduate students, but also for the advanced work and investigations of graduate students and specialists.

HISTOLOGY AND EMBRYOLOGY.

This laboratory occupies three rooms in the eastern end of the laboratory building. (1) The general laboratory occupies a floor space of about eight hundred square feet and is excellently lighted by large windows on the north and east sides. The students' work tables are of oak and placed immediately beneath the windows. The laboratory is well equipped with Leitz and Bausch and Lomb microscopes, Thoma, Minot, freezing and other microtomes, water baths, incubators, special forms of glassware, apparatus for injection, the reconstruction from sections of models in wax and other materials, and for other special methods of research. Each student is provided with a locker in which to keep his specimens and outfit of reagents, etc. (2) A special research laboratory and preparation room about sixteen feet square, lighted on two sides and opening into the general laboratory. It is well equipped with work tables, apparatus and preserved material for advanced and research work. (3) The professor's study and private laboratory, about fifteen feet square, well lighted and equipped including a large and comprehensive library relating to these subjects, and one of the richest and most extensive collections of serial sections and vertebrate embryos in the country.

Beneath the laboratory is a large basement used for purposes of storage and the terrarium and aquaria of the laboratory. All the rooms are heated by steam and supplied with water and gas.

The Laboratory of Bacteriology consists of a well lighted room

sixteen feet square, equipped with thermostats, steam and hot air sterilizers, special glassware and other apparatus for the cultivation and study of the various forms of bacteria. Cultures of the more prominent saprophytic and pathogenic forms of bacteria are maintained in the laboratory, thus offering opportunities for advanced and research work. This room adjoins the larger general laboratory where the class work of bacteriology and also of pathology is conducted.

PHARMACY.

This laboratory occupies the central portion of the laboratory building of the Medical Department and is 30 feet square, well lighted and fitted out with all the apparatus, drugs and chemicals necessary for thorough instruction in the elements of the practice of pharmacy. At the present time the furnishings of the laboratory are complete for elementary and undergraduate instruction.

PHYSICS.

The department of physics occupies the east half of the chemical and physical laboratory building, and has nineteen rooms devoted to its use. The most important are: (1) Precision room with masonry piers for the support of sensitive instruments. (2) Cathetometer and pendulum room with masonry piers. (3) Precision room, masonry piers. (4) Engine, dynamo and motor room, with masonry beds for engines and machines. (5) Workshop, carpenter and vise benches, lathe, etc. (6) Battery and accumulators. (7) General physical laboratory. (8) Apparatus room. (9) General lecture hall with amphitheatre seats accommodating about one hundred students. (10) Coat room. (11) Recitation room. (12) Electrical laboratory. (13) Photometer room. (14 and 15) Professors' studies. (16) Magnetometer room. (17) Library, reading and drawing room.

All rooms in this department are wired for electric light, for time, experimental current and call bells. Gas, water and sinks are in every room. In the attic are a meteorological room and a photograph room, provided with exposed window, skylight, etc. The whole available space for the department, exclusive of halls and stairways and attic is about thirteen thousand square feet. The department possesses a large collection of instruments for lecture room purposes and practical laboratory work.

Among the important pieces of apparatus are, a Societe Genevoise cathetometer, a Bianchi dividing engine, a spherometer, Atwood's machine, apparatus for illustrating all of the laws of elementary mechanics, hydraulic press, U. S. signal service barometer, a complete set of thermometers, Breguet metallic thermometer, complete sets of hygrometers and hydrometers, four chemical balances, one reversion pendulum, rotat-

ing table and attachments, three normal tuning forks, complete Lissajou's apparatus, Helmholz resonance globes, compound pendulum, manometric flame apparatus with mirror, sonometer, two heliostats, Browning spectroscope, Fresnel's mirrors and prisms, one Zeiss compound microscope, one Verdi chronograph, Duboscq optical bench and attachments, one spectrometer, diffraction grating, lantern polariscope, two students' polariscopes, projecting lantern with electric lamp, one Bunsen photometer, goniometer, Holtz, Toepler-Holtz and frictional electric machines, thirty storage cells, Thompson's quadrant electrometer, thirty-five galvanometers of various types including eight tangent mirror galvanometers, eight potential, three D'Arsonval, three ballistic, three torsion with proper resistance boxes, two Thompson reflecting astatic and others, two electro dynamometers, eight resistance boxes, three box bridges and testing sets, three standard ohms, six wire bridges, three magnetometers, five silver voltameters, three copper voltameters, twelve reading telescopes. The dynamo room contains a Westinghouse engine, a number of dynamos, including one 300-light alternator, one 150-light Edison, one nine-light Thomson-Houston arc, a variety of motors, arc and incandescent lamps, a number of ammeters and voltameters of different types and full sets of instruments for each machine. The Howard chronometer in the physical laboratory transmits time to the various rooms as well as to the observatory.

THE UNIVERSITY

The University.

The University of Minnesota comprises the following named colleges and departments:

THE GRADUATE DEPARTMENT.

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS.

THE COLLEGE OF ENGINEERING, METALLURGY AND THE MECHANIC ARTS.

THE COLLEGE OF AGRICULTURE.

THE DEPARTMENT OF LAW.

THE DEPARTMENT OF MEDICINE, composed of colleges as follows:

The College of Medicine and Surgery.
The College of Homeopathic Medicine and Surgery.
The College of Dentistry.
The College of Pharmacy.

The Regents of the University have also entrusted to their charge

THE EXPERIMENT STATION.

THE GEOLOGICAL AND NATURAL HISTORY SURVEY.

In the COLLEGE OF SCIENCE, LITERATURE AND THE ARTS there are three courses of study, the Classical, Scientific and Literary. The Classical course offers for its leading studies the Greek and Latin languages; the Scientific course, the natural and physical sciences; the Literary course, the modern languages. The regular courses are of four years' duration. The completion of the courses leads respectively to the degrees: Bachelor of Arts, Bachelor of Science, and Bachelor of Literature.

THE COLLEGE OF ENGINEERING, METALLURGY AND THE MECHANIC ARTS offers courses of study of four years each, in Civil, Mechanical, Electrical Engineering; Mining, Chemistry, Architecture and Metallurgy, leading to the Bachelor's degrees in Civil, Mechanical, Electrical Engineering; Mining, Architecture, Chemistry and Metallurgy.

The SCHOOL OF DESIGN offers a three years' course in industrial art, embracing historic ornament and practical decoration.

THE COLLEGE OF AGRICULTURE offers a regular course in agriculture, of four years of college work; the degree of Bachelor of Agriculture is conferred upon completion of the course.

THE SCHOOL OF AGRICULTURE is a training school for practical farm life, and for the College of Agriculture if the student desires to pursue the subject further.

THE DEPARTMENT OF LAW offers a two years' course of instruction leading to the degree of Bachelor of Laws. There is in addition an evening course (of three years) in this college leading to the same degree.

THE COLLEGE OF MEDICINE AND SURGERY and THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY each offer a three years' course of study, of eight months each; upon completion of the prescribed course the degree of Doctor of Medicine is conferred.

THE COLLEGE OF DENTISTRY offers a three years' course of study of eight months each; upon completion of the prescribed course the Degree of Doctor of Dental Medicine is conferred.

THE COLLEGE OF PHARMACY offers a two years' course of study, leading to the degree of Graduate in Pharmacy.

THE GRADUATE DEPARTMENT. In each of the colleges, except that of Medicine, there are advanced courses of study leading to second degrees. These courses are open to graduates of any reputable college upon presentation of diploma.

SPECIAL COURSES. In each of the colleges students of an advanced age are permitted to pursue, under direction of the faculty, one or two distinct lines of study.

THE

GRADUATE DEPARTMENT

The Graduate Department.

This department affords an extension of the work of the College of Science, Literature and the Arts; the College of Engineering, Metallurgy and the Mechanic Arts, and the Department of Law. It meets the threefold purpose of extending general culture, for which Masters' degrees are offered; of encouraging the mastery of a specialty, for which the degree of Doctor of Philosophy is given; of providing for those who desire a more thorough acquaintance with particular subjects than is offered in undergraduate work, but are not candidates for degrees.

REGISTRATION.

Those who wish to take any of these courses must present their application to the Registrar, and register for whatever work they may wish to pursue. All students doing work in this department, are required to pay a fee of ten dollars. Those doing laboratory work must pay the usual laboratory dues in addition to the regular fee.

THE MASTER'S DEGREE.

COLLEGE OF SCIENCE, LITERATURE AND THE ARTS.

I. The degree of master in science, literature, or the arts, will be conferred on a bachelor of this or any other reputable college or university, who not sooner than one year after graduation if in residence at this University, and not sooner than two years after graduation if not in residence, shall pass an examination on certain prescribed lines of study, and present a satisfactory thesis.

II. A candidate for a degree is required to present his application on the proper blank, stating the particular degree desired, the several subjects selected in which to be examined, and the title of thesis. Graduates of other colleges or universities must present their diplomas, or other credentials, on filing their applications. After the approval of the application by the faculty of the college, no changes or departures will be permitted.

Applicants for graduate work shall be referred, with the necessary credentials, to the committee on graduate studies and degrees, who shall examine said applicant and report accordingly to the general faculty. The Registrar shall notify professors of the lines selected by the applicant in their departments. Pro-

fessors shall report to the general faculty early in the third term of each year, the names and work of the graduate students actively at work in their departments.

The professors in charge of the lines pursued by the candidate for the master's degree, shall be the examining committee of said candidate, of which the professor in charge of the major line selected, shall be the chairman, and shall make its report to the committee on graduate studies and degrees.

III. Table of studies offered to candidates:

Divisions.	Groups.	Lines.
A.	*a.* Classical Philology.	1. Greek. 2. Latin. 3. Sanskrit.
	b. Modern Philology.	1. English. 2. French. 3. German. 4. Scandinavian Languages.
	c. Comparative Philology.	
B.	*a.* Biological Science.	1. Botany. *a.* Morphology. *b.* Physiology. 2. Zoölogy. *a.* Morphology. *b.* Physiology. 3. Palæontology.
	b. Physical Science.	1. Lithological Geology. 2. Chemistry. 3. Physics. 4. Mineralogy.
	c. Mathematics.	1. Co-ordinate Geometry. 2. Calculus. 3. Quaternions. 4. Astronomy.
C.	*a.* History.	1. Medieval Institutions of Europe. 2. Constitutional History of England. 3. Political History of the United States. 4. Modern European Politics. 5. The Philosophy of History.
	b. Economics and Political Science.	1. Private Economy. 2. Public Economy. 3. Science of Government. 4. International Law.
	c. Philosophy.	1. Ethics. 2. Psychology. 3. Philosophy of Religion. 4. History of Philosophy.

IV. The Amount of Work done by the candidate shall be equivalent to that done by the Senior class, viz: three terms on four subjects each term, with a thesis in addition.

Note: It will be observed that this is equivalent to 12 terms of work on one subject. Hence estimates of the time to be occupied will be stated in *twelfths* of a year.

V. Method of Selecting Work:

1. The candidate shall select from the Table in III, four lines of study.

2. One of these he shall indicate as a major line, the other three as minors.
3. The candidate shall devote not less than six-twelfths of his work to the major, and not less than one-twelfth to each minor (See IV).
4. The thesis shall be on some subject connected with the major line.
5. The following special regulations are to be observed with reference to the different degrees:
   a. For the degree of Master of Arts at least two of the four lines selected shall be from Division A., Group *a*, (Classical Philology).
   b. For the degree of Master of Science at least two of the four lines selected shall be from Division B.
   c. For the degree of Master of Literature at least two of the four lines shall be selected from Division A., Group *b*, (Modern Philology).

VI. The proficiency of candidates shall be determined by examinations only.

VII. All examinations shall be held at the University, at such time and in such manner as may be directed by the faculty.

THE COLLEGE OF ENGINEERING, METALLURGY AND THE MECHANIC ARTS.

All regulations governing candidates for the Masters' degree shall apply to the candidates for second degrees in the College of Engineering, Metallurgy and the Mechanic Arts, particularly as to the amount of work done, the method of selecting work, degree of proficiency expected and the time and manner of conducting the examinations.

Graduate work is offered, leading to the following second degrees:

Civil Engineer;
Mechanical Engineer;
Electrical Engineer;
Mining Engineer:
Chemical Engineer:
Metallurgical Engineer.

A detailed statement of the work offered and the subjects required for each of the above degrees, may be found under the title Graduate Work and Degrees, in the College of Engineering, Metallurgy and the Mechanic Arts.

DEPARTMENT OF LAW.

For the benefit of those students who wish to pursue their legal studies further than they are able to do in the undergraduate

course, a graduate course of one year is offered. Among the subjects considered are:

1. General Jurisprudence.
2. International Law.
3. Constitutional Law.
4. Civil Law.
5. Constitutional History.
6. Taxation.
7. Minnesota Law and Practice

The object of this course is to afford opportunity to gain a broader view of jurisprudence and also to gain a greater familiarity with the particular practice of Minnesota.

Those who enter this course as candidates for the degree must have already received the degree of Bachelor of Laws.

Those who spend the entire year in the work prescribed for this course, and pass a satisfactory examination upon the subjects pursued, will be entitled to the degree of Master of Laws.

The terms of tuition and the diploma fee are the same in this as in the other courses offered, but students who have graduated from the Law Department of the University will not be required to pay any matriculation fee.

DEGREE OF DOCTOR OF PHILOSOPHY.

The degree of Doctor of Philosophy will be conferred on bachelors of this or any other reputable college or university within not less than three years after graduation therefrom, under the following conditions:

I. The candidate shall elect some one of the *Groups* of study from the table in III, Master's degree, and within that group some special field, such as shall be approved by the faculty.

II. The candidate shall pass a minute examination on the special field selected, and shall show such acquaintance with other studies of the group as the faculty may require.

III. The candidate shall present a thesis on some subject connected with his special field of work; which thesis shall be the result of original investigation by the candidate, and shall be a contribution to knowledge.

IV. Candidates for this degree shall ordinarily be required to devote three full years of graduate study to preparation for the final examination; but if such study be not the candidate's sole occupation during that period, then the time of preparation shall be extended as the faculty may deem proper.

V. Candidates shall be in actual residence at the University and shall pursue their studies therein at least two years; they may, however, offer in lieu of one of these two years an equivalent term of resident graduate work in some other institution, it being

always required that they be in residence at this University the year next preceding the final examination. Candidates shall be regarded as in residence only when they carry on their work, in all essential respects, at the University itself.

VI. At the beginning of the year next preceding his final examination, the candidate shall pass a preliminary examination on the work for his degree that he has done up to that time.

VII. A fair copy of the thesis shall be placed in the hands of a committee of the faculty on or before the first day of April next preceding the final examination. No candidate shall be admitted to the final examination unless his thesis shall be approved by the committee. If the degree thereafter be conferred, at least one hundred printed copies of the thesis shall be deposited with the President of the University on or before the first day of January following.

VIII. The final examination for this degree shall be held on or about the third Thursday in May, as the President of the University may decide.

IX. Each examination for the degree of Doctor of Philosophy shall be held in the presence of the General Faculty, and shall be conducted as the Faculty may direct. A quorum for such examination shall be five.

X. In addition to passing the final examination, the candidate shall make a public defense of his thesis at such time and place as the General Faculty may determine.

Courses of Instruction.

I. **Animal Biology.** (*a*) **Courses VI-XI** of the work offered to undergraduates, in this department, are open also to graduate students.
(*b*) **Research.** Graduate students may pursue throughout the year any line of original investigation in animal biology.

II. **Astronomy.** (*a*) **A course in Practical Astronomy.**
(*b*) **A course in Orbit work.**

III. **Botany.** (*a*) **Courses VII-IX** of the work offered to undergraduates, in this department, are open also to graduate students.
(*b*) **Comparative Gametophytic Anatomy and Embryology;** laboratory and reference work. Open to those who have completed six terms of botanical work. *First term.*
(*c*) **Comparative Sporophytic Anatomy and Embryology;** laboratory and reference work. Open to those who have completed the work of the course (*b*) as above, *Second and Third terms.*
(*d*) **Phytodynamics and Oecology;** lectures and reference work. Open to those who have completed five terms of botanical work. *First term.*
(*e*) **Phytocytology, Structural and Dynamic;** laboratory and reference work. Open to those who have completed seven terms of botanical work. *Second and Third terms.*
(*f*) **Special Research Work in some Selected Line.** Open to all graduate students whose preparation may be deemed sufficient. *Throughout the year.*

IV. **Chemistry.** Graduate students will be allowed to take up laboratory practice at almost any point, either by themselves or with classes organized in the same work. The aim of the department will be to meet the wishes, on the one hand, of individual students pursuing the more practical branches, and on the other hand, of those who seek a greater familiarity with the general and theoretical portions of the science.

V. **English.** (*a*) **Old and Middle English including Chaucer;** see Course I (*a*, *b* and *c*.) Open to graduates who have never taken this work.
(*b*) **Gothic** in its relation to Modern Teutonic Philology, especially Old English. Dr. Joseph Wright's Primer of Gothic is made the basis for the work.
While individual students are always guided in any line of graduate work, classes will be formed, in 1893-94, only in two of the following subjects which a considerable number elect:
(*c*) **The Science and Art of Literary Criticism.**
(*d*) **Critical Studies** in the Literature of the Eighteenth Century.
(*e*) **Special Studies** in the late Victorian Literature. "Life and Letters of To-day."
(*f*) **Original Research** in American Literature.
(*g*) **The Evolution of English Prose** traced from its beginning to the present.
(*h*) **Comparative Literature** studied in its bearing upon English literature.
(*i*) Course IV (*b* to *f*) are open under certain conditions to those who have not pursued them in their undergraduate years.

VI. **Geology and Mineralogy. The Granitic Rocks of Central Minnesota,** with such preliminary mineralogical work as may be found necessary.

VII. German: (*a*) 1. Nibelungen Lied.
2. History of German Literature during the Twelfth and Thirteenth Centuries.
(*b*) 1. Lessing's Laocoon and Dramaturgy.
2. History of German Literature from 1749 to 1832.

VIII. Greek: (*a*) Greek Poetry. Epic, lyric, dramatic, bucolic, with the critical reading of authors.
(*b*) Greek Oratory or History, with the critical reading of authors.

IX. History. (*a*) Medieval Institutions of Europe.
(*b*) Constitutional History of England.
(*c*) Political History of the United States.
(*d*) Modern European Politics.
(*e*) The Philosophy of History.

X. (*a*) Sanskrit. Grammar and Reader; Story of Nala.
(*b*) Roman Lyric Poetry.

XI. Mathematics. (*a*) 1. An advanced course in Co-ordinate Geometry.
2. An advanced course in Differential Calculus.
3. An advanced course in Integral Calculus.
4. Quaternions.

The following subjects are offered to those who do not elect them in their undergraduate course:

(*b*) 1. Analytical Geometry.
2. Differential Calculus.
3. Integral Calculus.
4. Co-ordinate Geometry of Three Dimensions.

XII. Romance Languages. (*a*) **Old French.** Morceaux Choisis des Auteurs Française du Moyen Age, par L. Clédat. Some of the oldest monuments of the French language such as Les Serments de Strasbourg; La Chanson de Roland; La Vie de Saint Alexis; Le Roman du Renard; Le Roman de la Rose (selections) translated into modern French and the laws of the phonetic changes studied. This course is especially valuable to students who wish to make a scientific study of the French element in English.

(*b*) A systematic study of some special topic, as: The philosophy of the nineteenth century; the literature of the eighteenth century.

XIII. Philosophy—(*a*) **The Philosophy of Kant.** Systematic study of the relation of Kant to the development of Modern Philosophy. The most important parts of the three Critiques will be read and discussed. Special courses of collateral reading will be followed and reported upon by each individual. *First term—twice a week.*

(*b*) **Advanced Logic.** Study of principles. Systematic individual investigation, with reports. Bradley's Principles of Logic and Bosanquet's Logic will be taken as the basis of work. *Second term—twice a week.*

(*c*) **Ultimate Psychological Problems.** Application of metaphysical principles. Each student will make special study of one problem. Theses. *Third term—twice a week.*

The graduate courses are intended for those who have made a special study of Philosophy in the undergraduate years, and have acquired considerable power for independent work. They are not open to undergraduates, save in cases of very exceptional proficiency, and by special permission.

XIV. **Physics—Advanced Work in Physics** for those who have completed the undergraduate work up to the junior year and who have also completed the undergraduate course in Calculus.

XV. **Political Science and Economics.** The work of graduate students in this department is conducted on the seminar plan. The particular subjects of investigation are selected by individuals or groups after consultation with the professor.

THE COLLEGE OF

SCIENCE, LITERATURE AND THE ARTS

The College of Science, Literature and the Arts.

THE FACULTY.

CYRUS NORTHROP, LL. D., *President.*
WILLIAM W. FOLWELL, LL. D., *Professor of Political Science.*
JABEZ BROOKS, D. D., *Professor of Greek.*
JOHN G. MOORE, B. A., *Professor of German.*
CHRISTOPHER W. HALL, M. A., *Professor of Geology and Mineralogy.*
JOHN C. HUTCHINSON, B. A., *Associate Professor of Greek.*
JOHN S. CLARK, B. A., *Professor of Latin.*
MARIA L. SANFORD, *Professor of Rhetoric and Elocution.*
JOHN F. DOWNEY, M. A., C. E., *Professor of Mathematics and Astronomy.*
JAMES A. DODGE, Ph. D., *Professor of Chemistry.*
CHARLES W. BENTON, B. A., *Professor of French.*
O. J. BREDA, *Professor of Scandinavian.*
HENRY F. NACHTRIEB, B. S., *Professor of Animal Biology.*
GEORGE EDWIN MACLEAN, Ph. D., *Professor of English.*
FREDERICK S. JONES, B. A., *Professor of Physics.*
CONWAY MACMILLAN, M. A,. *Professor of Botany.*
W. S. HOUGH, Ph. M., *Professor of Philosophy.*
GEORGE H. MORGAN, Lieut. U. S. A., *Professor of Military Science and Tactics.*
MATILDA J. WILKIN, M. L., *Assistant Professor of English and German.*
CHARLES F. SIDENER, B. S., *Assistant Professor of Chemistry.*
WILLIS M. WEST, M. A., *Assistant Professor of History.*
FRANCIS P. LEAVENWORTH, M. A., *Assistant Professor of Astronomy.*
D. L. KIEHLE, LL. D., *Lecturer on Pedagogy.*
SAMUEL G. SMITH, D. D., *Lecturer on Sociology.*
HENRY T. ARDLEY, *Instructor in Free Hand Drawing.*
KENDRICK C. BABCOCK, B. L., *Instructor in English and History.*
JOSEPH BROWN PIKE, M. A., *Instructor in Latin and French.*
E. EUGENE MCDERMOTT, B. S., *Instructor in Elocution.*
AMELIA I. BURGESS, *Instructor in Free Hand Drawing.*
J. A. NESS, M. A., *Instructor in Scandinavian and Latin.*
A. D. MEEDS, B. S., *Instructor in Chemistry.*
MARIE SCHÖN, *Instructor in German.*
JOHN ZELENY, B. S., *Instructor in Physics.*
LOUISE G. KIEHLE, *Instructor in Physical Culture.*
CATALINA DE ALCALA, B. L., *Instructor in Spanish.*
OSCAR W. OESTLUND, M. A., *Assistant in Animal Biology.*
OSCAR FIRKINS, B. A., *Assistant in Rhetoric.*
HANNAH R. SEWALL, B. A., *Assistant in Political Science and Chemistry.*

SCHOLARS,

Giving Instruction and Assisting in Laboratories.

ALBERT SCHNEIDER, M. D., *in Botany.*
CASWELL A. BALLARD, *in Botany.*
FREDERICK W. SARDESON, M. S., *in Geology.*
JOHN ZELENY, B. S., *in Physics.*
CHARLES P. BERKEY, B. S., *in Mineralogy.*
ASA J. HAMMOND, B. A., *in Chemistry.*
C. EVERETT CONANT, B. A., *in Greek.*
CATHERINE COMFORT, B. L., *in English.*
W. H. A. RUTHERFORD, B. L., *in English.*
BENJAMIN F. GROAT, *in Mathematics.*
LAURA M. DENNISON, *in Freehand Drawing.*

ADMISSION.

Examination for admission will be held at the beginning of the year. See calendar on page four and program of examinations in appendix.

Students prevented from entering at the beginning of the year may be admitted at a subsequent date, when the circumstances are such as to justify such action. Such students are, however, at a great disadvantage, and all students expecting to enter the University are earnestly requested to be present at the beginning of the year.

All applicants should present themselves to the Registrar, who will furnish them with application blanks and directions how to proceed with their examinations, registration, etc.

ADMISSION ON DIPLOMA.

By a resolution of the Board of Regents, graduates of St. Paul and Minneapolis High Schools, are admitted to the Freshman class upon presentation of their diplomas. The State High School Board has inspected and classified the schools under its supervision, and graduates of the schools of the first rank are admitted to the Freshman class upon presentation of their diplomas. At present the following schools are in this rank: Albert Lea, Alexandria, Anoka, Austin, Crookston, Duluth, Faribault, Fergus Falls, Hastings, Henderson, Lake City, Litchfield, Mankato, Northfield, Owatonna, Red Wing, Rochester, Spring Valley, Stillwater.

It has been found that students who present diplomas of first-class high schools and are therefore entitled to admission, have, in some cases, omitted very important studies in their course, and substitute studies have been accepted in place of those omitted. To remedy this evil, principals are requested to furnish their pupils who come to the University, a certified list of the studies actually covered by the diploma in each case. The diploma will be accepted by the University for all that it really represents of work done. And if important subjects required by

the University have been omitted by the student in his preparatory work, he will be required to make it up, notwithstanding his diploma. Candidates holding diplomas from high schools of the first rank should therefore present their diplomas (at the time of making their application for admission) accompanied by a certificate of the principal of the school granting such diploma, showing the studies covered by the diploma. Blanks for this purpose may be had by applying to the Registrar of the University. Candidates holding certificates of the High School Board should present their credentials on making application.

CREDENTIALS FROM OTHER INSTITUTIONS.

Those coming from other schools or from normal schools should present their credentials upon making application, and then take such examinations as they are prepared for. The result of the examinations will be considered together with their credentials, each case will be passed upon by a committee and proper credit will be given.

As a rule, the marks of graduates of normal schools, or schools which admit to the freshman class of other reputable universities without examination, will be accepted for entrance to the University. But the Faculty reserves the right to require a student to take supplementary examinations if he does not sustain himself creditably in his course.

ADVANCED STANDING.

As to accepting grades from other colleges for credits in the University course proper, grades are accepted from all reputable colleges just so far as they cover, or are an equivalent to, the work done in this University. In bringing grades from other institutions, the certificates should show:

1. The subject studied; if a language, the work read, etc.
2. The time spent upon each subject.
3. The result: it is sufficient to state that the subject was creditably passed.

REQUIREMENTS FOR ADMISSION TO THE FRESHMAN CLASS.

Candidates are required to show proficiency in the following:

CLASSICAL COURSE.

Three books of the Iliad will be accepted in place of any two subjects required for admission to the Classical Course except Latin and Mathematics.

English Grammar.—The examination will cover, in general, the essentials of grammar as indicated in the following particulars: the classification of letters, and derivation and composition of words; the inflection of words, declensions, and synopsis of conjugation; the classification of words, according to their office, as parts of speech, their definitions, and their properties or attributes. The syntax; the relation of agreement and gov-

ernment; the various kinds of sentences, simple, compound or complex as to form, and declarative, etc., as to meaning. Sentential analysis; definition of parts or elements of a given sentence, whether primary or secondary elements and whether words only or phrases or clauses, and the office of each of these elements. In short, the candidate should be prepared to parse, including the etymology and syntax, each word, and to analyze each sentence in a given exercise. He should be trained to illustrate by specimen words, phrases, clauses, and sentences selected or composed by himself. He should be able to correct grammatical errors and give reasons for the corrections.

English Composition—The candidate should have such knowledge of form, penmanship, orthography, punctuation, syntax and constructions as will enable him to write with ease and elegance any letter of business or friendship; to draft resolutions and petitions; to prepare, for the press, reports of meetings and brief notices of current events. Accuracy upon these fundamental points will cover three-fourths of the examination. In addition to this some knowledge of English composition as a fine art is expected; of the power and beauty gained by the right use of rhetorical figures; of what is meant by purity, precision, brevity and harmony and style; and this not merely by committing to memory definitions and rules, but by studying the English classics and learning to appreciate the life and vigor of the great masters of English poetry and prose.

Essay—The essay will be on a subject to be announced at the examination, preparation for which will require the careful reading of Shakspere's Julius Cæsar, Goldsmith's Vicar of Wakefield, Scott's Lady of the Lake and Irving's Sketch book. Equivalents of these four books will be accepted.

Elementary Algebra—The Elementary Algebra of any one of the following authors will furnish the necessary preparation: Ray, Greenleaf, Wells, Sensening, Thompson and Quinby. If Olney's Complete Algebra or Wentworth's Elements of Algebra be used, selections may be made equivalent to the above.

Higher Algebra—Factoring, highest common divisor, lowest common multiple, fractions, involution, evolution, theory of exponents and radicals (including imaginaries).

Plane Geometry—Olney's text book, or equivalent, including the unsolved problems.

Solid Geometry—Olney's text book, or equivalent, including the exercises.

History of the United States—For grammar school grades the text book of Montgomery or Scudder is recommended. But if, as is much better, this subject is systematically studied in the high school, with elementary work in lower grade, the book of Alexander Johnston will be found valuable. In either case it is suggested that much more time be given to the development of the United States since the revolutionary war than to the story of the colonial period. The main features of the constitution should be clearly understood, and its practical working as interpreted by the Supreme court, and seen in operation in the growth of the nation. The chief object of this study should be that the student may understand the institutions of the republic, by learning how they come to be what they are. It should be noted that a definite portion of the examination will be devoted to geography.

History of Greece and Rome—The history of Greece and Rome should be made a study of the evolution of Greek and Roman institutions. Events should be considered in their bearing on that evolution. Any good outline history will answer as a text-book; but it should be supplemented by other material. Allen's Short History of the Roman people, and the Greece in Myer's Ancient Nations and Greece are suggested as indicating the

amount of knowledge expected. It should be noted that a definite portion of the examination will be devoted to geography.

Physiology—The candidate should be thoroughly familiar with as much anatomy, histology and physiology of the human body as is given in Martin's "Human Body," briefer course. As much knowledge of Hygiene and the effect of stimulants and narcotics on the human body as can be gained from both the general text and the special chapter on narcotics and stimulants in the briefer course of the "Human Body," is also required.

Natural Philosophy—As much as is contained in Appleton's School Physics, Avery's Natural Philosophy, Gage's Physics, or any equivalent text-book. If laboratory work is offered, as much as is contained in Hall & Bergen's Elements of Physics, or its equivalent, if accompanied by student's original note book signed "approved" by instructor, will be accepted.

Latin Grammar—This will include the subjects of Orthography, Etymology and Syntax, as found in Harkness, or Etymology and Syntax as found in Allen & Greenough's Latin Grammar. Proficiency is particularly desired in the following subjects: classification of letters; rules of phonetic changes as given in sections 19-36, inclusive, in Harkness, or sections 9-11 (and elsewhere) in Allen & Greenough; the analysis of the verb forms; the rules of syntax, and the principal parts of the irregular verbs.

Cæsar—First three books of the Gallic war; translation of passages of the text into correct and idomatic English; grammatical questions connected with the text, more especially on the subjunctive mood, indirect discourse and the sequence of tenses. The pupil should be able to rewrite in the *oratio recta* all the passages of *oratio obliqua* that occur in these books; the life of Cæsar and an account of his wars, especially those carried on in Gaul, with the geography of that country, and the location of the different tribes mentioned in the text; the organization of the Roman army; the method of reckoning time, distance, etc.

Cicero—Six orations: Four against Catiline, and any two of three following: "Poet Archias," "Ligarius," and "Marcellus." Translation as in Cæsar; grammatical questions, more especially in the syntax of the cases, the infinitive mood and participals; composition of words as given in sections 313-343 of Harkness' grammar; historical and geographical references found in the text; the life of Cicero and the history of his times, and of the Catilinian conspiracy; the antiquities connected with the text, particularly the Roman Senate, its origin, constitution, powers, duties, etc., the functions of the consulship, praetorship, and other offices.

Virgil—Six books of the Aeneid, peculiarities in the form and construction of words, the life of Virgil, and an account of his times and writings, the geography, antiquities, biographies and mythology connected with the text.

Greek Grammar—Brooks' Attic Greek or other Grammar.

Xenophon's Anabasis—Three books.

SCIENTIFIC COURSE.

English Grammar.
English Composition.
Essay.
Elementary Algebra.
Higher Algebra.
Plane Geometry.
Solid Geometry.
U. S. History.
History of Greece and Rome.
Physiology.
Natural Philosophy.

For more extended statement of the work covered by these subjects, see statement of the requirements for admission to the classical course.

*Geometrical Drawing. Two terms. Applicants must present the following neatly inked and lettered, with the name of the draughtsman, name of the place and date of completion, as well as the scale used, if one is required:

Two plates of geometrical problems, with fifteen problems on a sheet, three rows of five each.

One plate of projections of geometrical solids, each solid to be shown in three positions, twelve figures in a plate.

Two drawings showing plans and elevations, or front and side elevations, or sections of some object, as a roof, truss and stub end of a connecting rod, to be drawn to scale.

One plate containing at least two projections, drawn to scale, of some instrument or machine. This plate is to be drawn from sketches and measurements taken from the object itself, and must be accompanied by the original sketches showing the measurements.

The last four plates are to have heavy shade lines, the light being supposed to come at an angle of forty-five degrees, over the left shoulder.

Elementary Mechanical Drawing, published by Morris & Wilson, State University, Minneapolis, is recommended as a text book. The above work is covered by the first thirty-four pages, omitting what is given under Projections of Screws.

OR

*Freehand Drawing. Two terms. An examination is required in freehand sketching of lines at various angles, circular, elliptical and spiral forms, and such plain elementary drawing as will prove the applicant prepared to commence the drawing of simple objects in outline, prior to the study of light and shade and freehand perspective.

The following named books will cover the work required: Professor Thompson's "Elementary Freehand Series" up to book seven, or Prang's "Grammar Course," revised edition, up to book number seven. If White or other books are used, selections can be made which will be equivalent to the amount indicated.

Chemistry. The non-metallic elements as presented in the elementary text-books, such as Remsen's, Williams', etc.

Botany. Phanerogamic, Gray's Lessons and Manual.

Latin. As in the Classical Course.

OR

English. Latin Elements of English and History of English Literature.

German. Meissner's German Grammar, [Parts I, II, III.] Boisen's German Prose, and Buchheim's German Poetry for Beginners.

OR

English. Latin Elements of English and History of English Literature.

†**French.** Chardenal's Course, first two books of Telemaque.

* Physical Geography may be offered in lieu of Drawing, but only in cases of students who come from schools where drawing is not taught.

† In lieu of French, students may offer the following:

Drawing. Two terms of Freehand or Mechanical Drawing.

Shakspere. One term.

LITERARY COURSE.

English Grammar.
English Composition.
Essay.
Elementary Algebra.
Higher Algebra.
Plane Geometry.
Solid Geometry.
U. S. History.
History of Greece and Rome.
Physiology.
Natural Philosophy.

For more extended statement of work covered by these subjects, see requirements for admission to the classical course.

Latin. As in the classical course. OR
German or French. As in the scientific course.

English. Latin Elements of English and History of English Literature.
German. Joynes-Meissner's German Grammar [Parts I, II, III.] Boisen's "German Prose," and Buchheim's "German Poetry for Beginners."
French. Chardenal's Course, first two books of Telemaque.

CHANGES IN THE COURSE OF STUDY

FOR THE YEAR 1893-94.

In order to adapt the new course of study to those students now in the University, the following changes have been decided upon for the year 1893-94:

Sophomore Class—classical section will take History instead of English (B) in the second term.

Sophomore Class—scientific section will take French or German (B) instead of English A or B in the second term. Also French or German (B) instead of Mathematics, in the third term.

The junior class is strongly recommended to take the following:

In all courses—English Literature, Psychology or Logic and Astronomy.

Also in addition—

In classical course—Homer and Botany.

In scientific course—Mineralogy.

In literary course—German B or French A and Botany.

Courses of Study.

FRESHMAN YEAR—FIRST TERM.

CLASSICAL.	SCIENTIFIC.	LITERARY.
Mathematics, 5.	**Mathematics, 5.**	**Mathematics, 5.**
Higher Algebra.	Higher Algebra.	Higher Algebra.
Greek, 5.	**Drawing, 5.**	
* (*a*) Herodotus or (*b*) Homer's Iliad; history; composition; sight reading.	Freehand.	
Latin, 5.	**Latin, 5.**	**Latin, 5.**
Livy; sight reading; composition; history.	Livy; sight reading; composition; history.	Livy; sight reading; composition; history.
	or	or
	English, 5.	**English, 5.**
	Old English—Anglo-Saxon; grammar and prose masterpieces,	Old English—Anglo-Saxon; grammar and prose masterpieces.
	or	
	German, 5.	**German, 5.**
	Schiller's Wilhelm Tell; review of grammar,	Schiller's Wilhelm Tell; review of grammar,
	or	or
	French, 5.	**French, 5.**
	Advanced grammar; composition; translations.	Advanced grammar; composition; translations.
† **Military Drill, 3.**	**Military Drill, 3.**	**Military Drill, 3.**
‡ **Physical Culture, 3.**	**Physical Culture, 3.**	**Physical Culture, 3.**
Delsarte method.	Delsarte method.	Delsarte method.
Rhetorical Work, 1.	**Rhetorical Work, 1.**	**Rhetorical Work, 1.**
Composition.	Composition.	Composition.
Sanitary Science, 1.	**Sanitary Science, 1.**	**Sanitary Science, 1.**
Personal Hygiene.	Personal Hygiene.	Personal Hygiene.
‖ **English, 5.**	**English, 5.**	**English, 5.**
Applied Etymology	Applied Etymology.	Applied Etymology.

* (*a*) For those who have completed the work in Homer.
(*b*) For those who have not read Homer.
† Required of men.
‡ Required of women.
‖ Optional for foreign speaking students.

FRESHMAN YEAR—SECOND TERM.

CLASSICAL.	SCIENTIFIC.	LITERARY.
Mathematics, 5.	**Mathematics, 5.**	**Mathematics, 5.**
Plane and Spherical Trigonometry.	Plane and Spherical Trigonometry.	Plane and Spherical Trigonometry.
Greek, 5.	**German B, 5.**	
(*a*) Memorabilia or (*b*) Xenophon's Symposium; composition; sight reading.	Joynes-Meissner's German grammar; Boisen's German prose,	
	or	
	French B, 5.	
	Whitney's French grammar; Blouet's French composition; translations.	
Latin, 5.	**Latin, 5.**	**Latin, 5.**
Livy; sight reading; composition; history.	Livy; sight reading; composition; history.	Livy; sight reading; composition; history.
	or	or
	English, 5.	**English, 5.**
	Old and Middle English poetry,	Old and Middle English poetry.
	or	
	German A, 5.	**German A, 5.**
	Mueller's Geschichte des Deutschen Volkes,	Mueller's Geschichte des Deutschen Volkes,
	or	or
	French A, 5.	**French A, 5.**
	Advanced grammar; composition; translations.	Advanced grammar; composition; translations.
Physical Culture, 3.	**Physical Culture, 3.**	**Physical Culture, 3.**
Delsarte method.	Delsarte method.	Delsarte method.
Rhetorical Work, 1.	**Rhetorical Work, 1.**	**Rhetorical Work, 1.**
Reading.	Reading.	Reading.
Philosophy, 1.	**Philosophy, 1.**	**Philosophy, 1.**
Elements of Logic.	Elements of Logic.	Elements of Logic.
‖ **English, 5.**	**English, 5.**	**English, 5.**
Applied Syntax.	Applied Syntax.	Applied Syntax.

‖ Optional for foreign speaking students.

FRESHMAN YEAR—THIRD TERM.

CLASSICAL.	SCIENTIFIC.	LITERARY.
Chemistry, 4.	**Chemistry, 4.**	**Chemistry, 4.**
The non-metallic elements; lectures; some laboratory exercises.	A partial review of the non-metallic elements; a beginning of the detailed study of the metallic elements.	The non-metallic elements; lectures; some laboratory exercises.
or	or	or
Physics, 4.	**Physics, 4.**	**Physics, 4.**
Elementary physics; recitations and experimental lectures.	Mechanics.	Elementary Physics; recitations and experimental lectures.
Greek, 4.	**German B, 4.**	**German B, 4.**
(*a*) Demosthenes or (*b*) Lysias; history; sight reading.	Boisen's German Prose; Buchheim's German Poetry.	Joynes-Meissner's German Grammar; Boisen's German Prose.
	or	or
	French B, 4.	**French B, 4.**
	Whitney's French Course; Blouet's French Composition; translations.	Whitney's French Course; Blouet's French Composition; translations.
History, 4.	**Botany, 4.**	
Institutions of the Middle Ages in Europe.	General plant morphology; lectures; laboratory work; collateral reading.	
	or	
	Zoology, 4.	
	General Animal Biology; lectures, laboratory and field work.	
Latin, 4.	**Latin, 4.**	**Latin, 4.**
Plautus and Terence; study of the early Latin, language and literature; development of the drama; composition.	Horace; a study of his times, style and works; outline history of Roman literature.	Plautus and Terence; study of the early Latin, language and literature; development of the drama; composition.
	or	or
	English, 4.	**English, 4.**
	Middle English poetry culminating in the study of Chaucer.	Middle English poetry culminating in the study of Chaucer.
	or	
	German A, 4.	**German A, 4.**
	Heine's Harzreise und Buch der Lieder.	Heine's Harzreise und Buch der Lieder.
	or	or
	French A, 4.	**French A, 4.**
	Advanced grammar; composition; translations.	Advanced grammar; compositions; translations.

FRESHMAN YEAR—THIRD TERM—Continued.

CLASSICAL.	SCIENTIFIC.	LITERARY.
Military Drill, 3.	**Military Drill, 3.**	**Military Drill, 3.**
Physical Culture, 3.	**Physical Culture, 3.**	**Physical Culture, 3.**
Delsarte method.	Delsarte method.	Delsarte method.
Rhetorical Work, 1.	**Rhetorical Work, 1.**	**Rhetorical Work, 1.**
Composition.	Composition.	Composition.

SOPHOMORE YEAR—FIRST TERM.

CLASSICAL.	SCIENTIFIC.	LITERARY.
German B, 4.	**German B, 4.**	**German B, 4.**
Joynes-Meissner's German Grammar; Boisen's German Prose.	Freitag's Die Journalisten or equivalent.	Boisen's German Prose; Buchheim's German Poetry.
or	or	or
French B, 4.	**French B, 4.**	**French B, 4.**
Whitney's French Course; or Brachet's Historical Grammar; composition; translations.	Whitney's French Course; Blouet's French Composition; translations.	Whitney's French Course; Blouet's Composition; translations.
Chemistry, 4.	**Chemistry, 4.**	**Chemistry, 4.**
The metallic elements; lectures; laboratory exercises.	Laboratory work in the preparation and reaction of salts; qualitative analysis.	The metallic elements; lectures; laboratory exercises.
or	or	or
Physics, 4.	**Physics, 4.**	**Physics, 4.**
Elementary Physics.	Sound and Heat.	Elementary Physics.
Greek, 4.	**History, 4.**	**French A, 4.**
Plato: Apology and Crito; theses; sight reading.	Institutions of the Middle Ages in Europe.	Advanced grammar; composition; translations.
		or
		German A, 4.
		Gore's Science Reader.
Latin, 4.	**Botany, 4.**	**Latin, 4.**
Horace; study of the Latin language and literature.	General plant morphology; a continuation of the previous term.	Horace; study of the Latin language and literature.
	or	or
	Zoology, 4.	**English, 4.**
	Animal Biology begun with the Protozoa.	History of Old and Middle English literature.
Military Drill, 3.	**Military Drill, 3.**	**Military Drill, 3.**
Rhetorical Work, 1.	**Rhetorical Work, 1.**	**Rhetorical Work, 1.**
Composition.	Composition.	Composition.
Philosophy, 1.	**Philosophy, 1.**	**Philosophy, 1.**
The Philosophy of Nature.	The Philosophy of Nature.	The Philosophy of Nature.

SOPHOMORE YEAR—SECOND TERM.

CLASSICAL.	SCIENTIFIC.	LITERARY.
English, 4.	**English, 4.**	**English, 4.**
Old English (Anglo-Saxon), elements and outline history of the English language.	(*a*) History of the English language; studies in Shakspere, or (*b*) as in the classical section.	(*a*) History of the English language; studies in Shakspere, or (*b*) as in the classical section.
Latin, 4.	**History, 4.**	**History, 4.**
Tacitus and Pliny; social life of the Romans in the late republic and early empire.	Institutions of England in the Middle Ages.	Institutions of the Middle Ages in Europe.
Botany, 4.	**Botany, 4.**	**Botany, 4.**
General Botany; lectures; demonstrations; laboratory work; collateral reading,	General plant morphology; a continuation of the work of the previous term,	General botany; lectures; laboratory work; demonstrations; collateral reading,
or	or	or
Zoology, 4.	**Zoology, 4.**	**Zoology, 4.**
General Zoölogy; lectures; demonstrations.	Animal biology continued.	General Zoölogy; lectures; demonstrations.
German B, 4.	**Chemistry, 4.**	**German B, 4.**
Boisen's German prose; Buchheim's German Foetry,	Qualitative Analysis.	Feitag's Die Journalisten, or equivalent.
or	or	or
French B, 4.	**Physics, 4.**	**French B, 4.**
Whitney's French course, and Blouet's Composition; translations.	Electricity.	Whitney's FrenchCourse; Blouet's Composition; translations.
Rhetorical Work, 1.	**Rhetorical Work, 1.**	**Rhetorical Work, 1.**
Voice building; interpretation.	Voice building; interpretation.	Voice building; interpretation.
Philosophy, 1.	**Philosophy, 1.**	**Philosophy, 1.**
Introduction to Psychology.	Introduction to Psychology.	Introduction to Psychology.
Sanitary Science, 1.	**Sanitary Science, 1.**	**Sanitary Science, 1.**
Family Hygiene.	Family Hygiene.	Family Hygiene.

SOPHOMORE YEAR—THIRD TERM.

CLASSICAL.	SCIENTIFIC.	LITERARY.
English, 4.	**English, 4.**	**English, 4.**
General introduction to the history of modern English literature.	General introduction to the history of modern English literature.	General introduction to the history of modern English literature.
Botany, 4.	**Botany, 4.**	**Botany, 4.**
General botany; a continuation of the work of the previous term,	General plant morphology; a continuation of the work of the previous term,	General botany; a continuation of the work of the previous term,
or	or	or
Zoology, 4.	**Zoology, 4.**	**Zoology, 4.**
General Zoölogy; lectures; demonstrations.	Animal biology; concluded with the embryology of the chick.	General Zoölogy; lectures; demonstrations.
Greek, 4.	**Chemistry, 4.**	**German A, 4.**
Tragedy—Sophocles' Antigone, or one play of the other dramatists; history; theses; sight reading.	Qualitative Analysis.	Becker's Friedrich der Grosse; later German history,
	or	or
	Physics, 4.	**French A, 4.**
	Light.	Advanced grammar; translations,
		or
		Latin, 4.
		Tacitus and Pliny; social life of the Romans in the late republic and early empire.
History, 4.	**Mathematics, 4.**	**History, 4.**
Institutions of England in the Middle Ages.	Analytical Geometry.	Institutions of England in the Middle Ages.
Rhetorical Work, 1.	**Rhetorical Work, 1.**	**Rhetorical Work, 1.**
Speeches, toasts, &c.	Speeches, toasts, &c.	Speeches, toasts, &c.
Philosophy, 1.	**Philosophy 1.**	**Philosophy, 1.**
Introduction to Ethics.	Introduction to Ethics.	Introduction to Ethics.

JUNIOR YEAR—FIRST TERM.

Animal Biology [4]—(*a*). Animal Histology. Lectures and laboratory work on the animal cell and tissues, methods and technique. Open to those who have completed the course in Zoölogy.

(*b*) Principles of Animal Physiology. Lectures and demonstrations.

(*c*) Comparative anatomy of Invertebrates. Must be preceded by the course in Zoölogy (and junior course (*a*), if special attention is given to microscopic anatomy.)

Botany [4]—(*a*). General Plant Physiology.

(*b*) Elements of Archegoniate and Metaspermic Taxonomy.

(*c*) General Algology.

(*d*) General Mycology.

Chemistry [4]—(*a*). Quantitative Analysis. Open to students who have completed the chemistry of the freshman and sophomore years, scientific course.

(*b*) Qualitative Analysis. Open to students who have completed the chemistry of the classical and literary courses.

English [4]—Studies in Elizabethan Masterpieces.

French [4]—MacMillan's Composition; translations from various authors; lectures on the history of the French language and medieval literature.

German [4]—Gœthe's Faust; Life and works of Gœthe.

Greek [4]—Archaeology of Greek Art; open to students of all courses.

History [4]—England since the Renaissance; the English constitution traced to the end of the Napoleonic wars. Open to those who have completed the history of the sophomore year.

Latin [4]—Cicero—De Natura Deorum; selections from Lucretius; religion of the Romans.

Mathematics [4]—Analytical Geometry.

Mineralogy [4]—Crystallography and the physical characters of minerals.

Philosophy [4]—General Psychology (3); Anatomy and Physiology of the Nervous System (1).

Physics [4]—(*a*). Practical Physics; laboratory work for those who have completed the scientific Physics of the freshman and sophomore years.

(*b*) Laboratory practice for those who have completed the Physics of the classical and literary courses.

Political Science [4]—The Elements of Private Economy.

Rhetoric [4]—Literary Criticism. Open to those who have completed the rhetorical work of the freshman and sophomore years.

Scandinavian [4]—Smith and Horneman's Norwegian Grammar; Björnson's Synnöve Solbakken.

JUNIOR YEAR—SECOND TERM.

Animal Biology [4]—(*a*). Animal Histology. A continuation of the work of the previous term.

(*b*) Animal Physiology and Histology. Waller's introduction to Human Physiology, and demonstrations. This course is intended for those who do not wish to pursue morphological studies and yet desire more than is provided for in course (*b*) of the previous term.

(*c*) Comparative anatomy of Invertebrates. A continuation of the work of the previous term.

Botany [4]—(*a*). General Plant Physiology.

(*b*) Elements of Archegoniate and Metaspermic Taxonomy.

(*c*) General Algology.

(*d*) General Mycology.

A continuation of the work of the previous term.

Chemistry [4]—(*a*) Quantitative Analysis.

(*b*) Qualitative Analysis.

A continuation of the work of the previous term.

English [4]—Shakspere: King Lear, with general introduction to the tragedies.

French [4]—Translations from English into French; translations from various authors; lectures on the Renaissance Period and the literature of the XVII Century or the Classical School.

Greek [4]—Archaeology of Greek Art; a continuation of the work of the first term.

History [4]—The political and constitutional history of the United States, to the adoption of the constitution. Open to those who have completed the courses in history of the sophomore year.

Mathematics [4]—Differential Calculus.

Mineralogy [4]—The ores of the metals with practical blowpipe determination. Open to those who have completed the work of the previous term.

Philosophy [4]—General Psychology. A continuation of the work of the previous term.

Physics [4]—(*a* and *b*). A continuation of the work of the previous term.

Political Science [4]—The State and the Government.

Rhetoric [4]—Literary Criticism. A continuation of the work of the previous term.

Scandinaivan [4]—Smith and Horneman's Norwegian Grammar, reviewed; Böjrnson's Synnöve Solbakken, completed.

JUNIOR YEAR—THIRD TERM.

Animal Biology [4]—(*a*). Animal Histology, concluded.

(*b*) Animal Physiology and Histology, continued.

(*c*) Comparative Anatomy of Invertebrates, continued.

Astronomy [4]—General Astronomy. Open to those who have completed the freshman Mathematics.

Botany [4]—(*a*). General Plant Physiology.

(*b*) Elements of Archegoniate and Metaspermic Taxonomy.

(*c*) General Algology.

(*d*) General Mycology.

A continuation of the work of the previous term.

Chemistry [4]—(*a*). Quantitative Analysis. A continuation of the work of the previous term.

(*b*) Organic Chemistry. Descriptive and experimental; lectures with some laboratory work.

Drawing [4]—Freehand. Open to students who have completed as much freehand drawing as is required for entrance to the freshman class, scientific course.

English [4]—Milton's Paradise Lost.

German [4]—Wallenstein's Life and Works of Schiller; theses.

Greek [4]—Neo-Hellenic; collateral reading; theses.

History [4]—(*a*) Political and constitutional history of the United States since 1789. A continuation of the work of the previous term.

(*b*) American History.
Open to those who have completed the history of the sophomore year.

Latin [4]—Outlines of Roman Law.

Mathematics [4]—Integral Calculus.

Mineralogy [4]—(*a*). Quantitative analysis; the assay of gold and silver ores.

(*b*) The physical characters of minerals investigated; work with the goniometer and stauroscope. Open to those who have completed the work of the previous term.

Philosophy [4]—(*a*). Greek and Christian Ethics.

(*b*) Experimental Psychology. Lectures and laboratory work.
Open to those who have completed the course in General Psychology.

(*c*) Logic—Deductive and Inductive.

Physics [4]—(*a* and *b*). A continuation of the work of the previous term.

Political Science [4]—The Law and the Constitution.

Rhetoric [4]—Essays upon art subjects. Open to those who have completed the rhetorical work of the freshman and sophomore years.

Sanitary Science [1]—Open to both juniors and seniors. The subject will be changed alternate years.

Scandinavian [4]—Jonas Lie's Færtællinger og Skildringer fra Norge.

SENIOR YEAR—FIRST TERM.

Animal Biology [4]—(*a*). Comparative anatomy of Vertebrates.

(*b*) Embryology of Invertebrates.

(*c*) Embryology of Vertebrates.

Open to those who have completed the course in Zoölogy and junior course (*b*).

(*d*) Taxonomy, Ornithology, Ichthyology and Entomology.
Open to those who have the necessary preparation.

Astronomy [4]—Practical Astronomy. Open to those who have completed the junior Astronomy and Mathematics.

Botany [4]—(*a*) Special Problems in Plant-Physiology.

(*b*) Special Taxonomy.

(*c*) Special Plant Morphology and Embryology.

Chemistry [4]—Organic Chemistry; ultimate and proximate analysis.

English [4]—Literature in the United States in the nineteenth century.

Geology [4]—Elements of general Geology; physiographic, structural and dynamical.

Greek [4]—Lyric and Bucolic Poets; collateral reading; theses.

History [4]—Modern European Politics. Open to students who have completed the history of the Sophomore year.

Pedagogy [4]—A study of the development of child mind and the methods by which the various subjects of education may be presented with effectiveness for the culture of the intellectual power and character. Open to those who have had Psychology.

Philosophy [4] (*a*) History of Modern Philosophy; theses upon some philosopher or philosophical masterpiece. Open to those who have completed the Ethics of the junior year.

(*b*) Aesthetics (2 or 4) Kedney's Hegel's Aesthetics, with lectures. Open to those who have completed Psychology.

Physics [4]—Advanced Physics; mechanics of solids. Open to those who have completed Calculus and the course in junior Physics.

Political Science [4]—Economic History.

Scandinavian [4]—(*a*) Henrik Ibsen's Fruen fra Havet; lectures on Ibsen and the drama read. Björnson's Fiskejenten; the poems therein committed to memory.

(*b*) Advanced course; Njaal's Saga read and explained; lectures given on Old Icelandic literature; Norse Mythology and History.

SENIOR YEAR—SECOND TERM.

Animal Biology [4]—(*a*) Comparative anatomy of Vertebrates.

(*b*) Embryology of Invertebrates.

(*c*) Embryology of Vertebrates.

(*d*) Taxonomy, Ornithology, Ichthyology and Entomology.

A continuation of the work of the previous term.

Botany [4]—(*a*) Special Problems in Plant-Physiology.

(*b*) Special Taxonomy.

(*c*) Special Plant Morphology and Embryology.

A continuation of the work of the previous term.

English [4]—Lectures on Oratory (1); literature at the opening of the nineteenth century (3).

French [4]—Howell's farce, The Elevator, translated into French; translations from various authors; lectures on the literature of the XVIII Century with a view to the causes of the French Revolution.

Geology [4]—(*a*) Historical Geology. Open to those who have completed the first term's work in Geology.

(*b*) Petrological Geology. Open to those who have completed the first term's work in Geology and the first in Mineralogy.

German [4]—Lessing's Laocoon; Life and Works of Lessing.

Greek [4]—Lectures on Greek poetry; select readings from the poets.

History [4]—Modern European Politics. A continuation of the work of the previous term.

Latin [4]—Seneca; his shorter essays; his ethical teaching.

Mathematics [4]—Methods of Least Squares.

Military Science [4]—The elements of modern tactics and the art of war.

Pedagogy [4]—A study of the American school system; law; organization of studies; supervision; sanitation; etc.

Philosophy [4]—Ethics; the Principles of Morality with special reference to modern theories; theses and discussions, after the seminar method.

Physics [4]—Advanced Physics. A continuation of the work of the previous term.

Political Science [4]—American Public Economy.

Scandinavian [4]—(*a*) Swedish; reading of easy Swedish texts.

(*b*) Advanced course; the literature of Norway from 1814 to the present time.

(*c*) Old Icelandic; Nygaard's Grammar and Reader; selections from the Sagas read and explained.

SENIOR YEAR—THIRD TERM.

Animal Biology [4]—(*a*). Comparative anatomy of Vertebrates.

(*b*) Embryology of Invertebrates.

(*c*) Embryology of Vertebrates.

(*d*) Taxonomy, Ornithology, Ichthyology and Entomology.

A continuation of the work of the previous term.

Astronomy [4]—Practical Astronomy. A continuation of the work of the first term.

Botany [4]—(*a*). Special Problems in Plant-Physiology.

(*b*) Special Taxonomy.

(*c*) Special Plant Morphology and Embryology.

English [3 or 4]—Philosophy of English and American literature (3); lectures on Shakspere (1).

French [4]—Howell's A Letter of Introduction, translated into French; translations from various authors; lectures on the modern schools in literature: Romantic; Realistic; Impressionist, etc.

Geology [4]—(*a*). Paleontological studies. Open to those who have completed course (*a*) in Geology of the previous term.

(*b*) Petrological studies. A continuation of the work of the previous term.

(*c*) Applied Geology. Open to those who have completed the Geology of the first term.

German [4]—Nibelungen Lied; History of German literature; lectures; theses.

History [4]—Philosophy of History. Open to those who have completed four terms work in history.

Latin [4]—(*a*) Roman satire; elements and development of satire; comparison of Roman authors of satire.

(*b*) Sanskrit. Grammar and Reader; Story of Nala.

Mathematics [4]—Co-ordinate Geometry of three dimensions.

Pedagogy [2]—Educational history and theories.

Philosophy [4]—(*a*). Philosophy of Religion.

(*b*) Social ethics. This course will not be given until the year 1894-95.

Physics [4]—Advanced Physics. A continuation of the work of the previous term.

Political Science [4]—Public International Law.

Scandinavian [4]—(*a*) Björnson's En Glad Gut; composition.

(*b*) Old Icelandic; Nygaard's Grammar and Reader; selections from the Sagas read and explained; lectures of the history of the Scandinavian languages.

Courses of Instruction.

All Courses of Instruction, unless otherwise specified, include four exercises per week, during the terms through which the course runs.

ANIMAL BIOLOGY.

FOR UNDERGRADUATES.

Course I. Animal Biology. Lectures and Laboratory work. *Freshman III, Sophomore, I, II, III. Sc.* Open as an elective to those who have completed the long or short course in Botany.

Course II. General Zoology. Lectures and demonstrations. *Sophomore, II, III, Cl. and Lt.* Open as an elective to those who have completed the long or short course in botany.

Course III. Animal Histology. Lectures and laboratory work on the animal cell and tissues, methods and technique. *Junior or Senior I, II, III.* Open to those who have completed course I or course I of Botany.

Course IV. Principles of Animal Physiology. Lectures and demonstrations. *Junior or Senior I.* Open to all.

Course V. Animal Physiology and Histology. Waller's Introduction to Human Physiology; demonstrations. *Junior or Senior II, III.* This course is for those who do not intend to pursue morphological studies and yet desire more than is provided for in course IV.

FOR GRADUATES AND UNDERGRADUATES.

Course VI. Comparative Anatomy of Invertebrates. Laboratory and reference work. *Junior or Senior I, II, III.* Open to those who have completed course I (and course III, if special attention is given to microscopic anatomy.)

Course VII. Comparative Anatomy of Vertebrates. Laboratory and reference work. *Junior or SeniorI, II, III.* Open to those who have completed course I (and course III, if special attention is given to microscopic anatomy.

Course VIII. Embryology of Invertebrates. Laboratory and reference work,with the ontogeny of some invertebrate as a center. *Junior or Senior I, II, III.* Open to those who have completed courses I and III.

Course IX. Embryology of Vertebrates. Laboratory and reference work, with the ontogeny of some vertebrate as a center. *Junior or Senior I, II, III.* Open to those who have completed courses I and III.

Course X. Speculative Zoology. *Occasional lectures to those pursuing courses VI, VII, VIII, IX.*

Course XI. Ornithology, Taxonomy, Ichthyology and Entomology. Laboratory, museum and reference work. *Junior or Senior I, II, III.* Open to those sufficiently prepared.

FOR GRADUATES.

Research. The student may pursue throughout the year any line of original investigation in animal biology.

THE JOURNAL CLUB.

This club meets once a week throughout the year to listen to abstracts of the current zoölogical literature. The attendance is voluntary. All those pursuing any course above course V are, however, expected to be active members of the club.

THE BIOLOGICAL CLUB.

This club meets once a month throughout the year to listen to reports on the work going on in the fields of biology. Attendance is voluntary, though all advanced students in the departments of animal biology and botany are urged to attend.

THE READING CLUB.

Winter evenings one hour a week. Open to all advanced students in the department. Reading and discussion of biological writings.

ASTRONOMY.

FOR UNDERGRADUATES.

Course I. General Astronomy. The text-book work is supplemented by lectures, especially on the history of the science, and on recent astronomical discoveries and theories. *Junior III.* Open to those who have completed courses I and II of Mathematics.

Course II. Practical Astronomy. The theory of instruments, the use of the Ephemeris and Nautical Almanac, the various methods of determining time, latitude, longitude, parallax, and the position of celestial bodies; observatory practice. *Seniors I and II.* Open to those who have completed course I and courses I to V of Mathematics.

FOR GRADUATES.

Course III. (*a*) Practical Astronomy.
(*b*) Orbit Work.

BOTANY.

FOR UNDERGRADUATES.

Course I. General Plant Morphology. Lectures, laboratory work and collateral reading. The course includes a view of the comparative anatomy and embryology of plants and serves to establish the basis of the various special courses in upper years. *Freshman III, Sophomore I, II and III, Sc.* Open as an elective for those who have pursued the long or short courses in general zoölogy.

Course II. General Botany. Lectures, demonstrations, laboratory work and collateral reading. The course presents an outline of special morphology and physiology, but particular emphasis is laid upon morphology *Sophomore II and III, Cl. and Lit.* Open as an elective for those who have pursued the long or short course in general zoölogy.

Course III. General Plant Physiology. Lectures with collateral reading and experimentation. *Junior or Senior, I, II and III.*

Course IV. Elements of Archegoniate and Metaspermic Taxonomy. Lectures, reference reading, herbarium work. *Junior or Senior I, II and III.*

Course V. General Algology. Laboratory and reference work. This course includes a study of both marine and fresh-water forms and bears toward comparative morphology rather than towards taxonomy. *Junior or Senior I, II and III.*

Course VI. General Mycology. Laboratory and reference work. The course includes a comparative morphological and taxonomic survey of the fungi, with assignments in Schroeter, Ludwig, De Bary, Zopf and Brefeld. *Junior or Senior I, II and III.*

FOR UNDERGRADUATES AND GRADUATES.

Course VII. Special Problems in Plant Physiology. Laboratory and reference work. Particular attention will be devoted to methods of setting up apparatus and a thesis will be required at the completion of the course. Open to those who have pursued the long course either in Botany or Zoölogy or Course III in Botany. *Senior I, II and III.*

Course VIII. Special Taxonomy. Herbarium and reference work. Open to those who have pursued Course I in botany or Course II followed by Course IV. *Senior I, II and III.*

Course IX. Special Plant Morphology and Embryology. Lectures, laboratory work and collateral reading. Open to those who have completed five terms of work in the department of botany.

FOR GRADUATES.

Course X. Comparative Gametophytic Anatomy and Embryology. Laboratory and reference work. *Term I.* Open to those who have pursued six terms of botanical work.

Course XI. Comparative Sporophytic Anatomy and Embryology. Laboratory and reference work. Open only to those who have completed Course X. *Terms I and II.*

Course XII. Phytodynamics and Oecology. Lectures and reference work. Open to those who have pursued five terms of botanical work. *Term I.*

Course XIII. Phytocytology, Structural and Dynamic. Laboratory and reference work. Open to those who have pursued seven terms of botanical work.

Course XIV. Special Research in some selected line. Open to all graduate students whose preparation may be deemed sufficient. *Throughout the Year.*

JOURNAL CLUB AND SEMINAR.

This elastic organization meets bi-weekly throughout the year. While attendance is entirely voluntary, those pursuing elective work in the department of botany are urged to attend.

THE BIOLOGICAL CLUB.

This club meets once a month throughout the year to listen to reports on the work going on in the fields of biology. Attendance is voluntary, though all advanced students in the departments of botany and animal biology are urged to attend.

READING CLUB.

During winter evenings bi-weekly gatherings of advanced students are held at the house of the professor of botany, for the purpose of reading and discussing classical botanical literature,

CHEMISTRY.

FOR UNDERGRADUATES.

Course 1. The Chemistry of the Non-Metallic and Metallic Elements. A partial review of the non-metallic elements and a beginning of the detailed study of the metallic elements, followed by the preparation and the reactions of salts and by qualitative analysis. The greater part of the time is given to laboratory practice. *Freshman III, and Sophomore I, II III, Sc.* Open to those who have completed the chemistry of the non-metallic elements, as required for entrance to the scientific course.

Course II. The Chemistry of the Classical and the Literary Courses in the first two years. This is wholly of an elementary kind, comprising a study of the non-metallic and metallic elements. This is mainly a lecture course; but some laboratory exercises have been introduced. *Freshman III and Sophomore I.*

Course III. Quantitative Analysis, through either one, two or three terms, as elected by individual students. Simple gravimetric determinations of certain metals and acids are first made, followed by determinations of several ingredients in the same compound, then by complex analysis, as of limestone, clay, etc. Volumetric methods are next learned and applied, then gravimetric and volumetric processes are employed together. Complete analyses of iron ores are included in this course; also sanitary and complete analyses of waters. *Junior I, II, III.*

Course IV. Qualitative Analysis. *Junior I, II.* Open to those who have completed Course II.

Course V. Organic Chemistry. The first part of this study is descriptive and experimental, with lectures and some laboratory exercises. The second part is wholly laboratory work, comprising ultimate and proximate organic analysis. *Junior III, and Senior I.* Open to those who have completed as much chemistry as is included in Course II.

FOR GRADUATES.

Course VI. Graduate students will be allowed to take up laboratory practice at almost any point, either by themselves or with classes organized in the same work. The aim of the department will be to meet the wishes, on the one hand, of individual graduate students pursuing the more practical branches, and on the other hand, of those who seek a greater familiarity with the general and theoretical portions of the science.

FREEHAND DRAWING.

Course I. Elementary Drawing from the Cast in Crayon and Charcoal, embracing the study of light and shade and perspective.

Course II. Advanced Drawing from the Cast, embracing the study of the Antique in Crayon and Charcoal. Students who pursue this course must have completed Course I.

Course III. Sepia and Water Color Painting from Casts of Historic Ornament and Natural Objects. Students who pursue this course must have completed Courses I and II.

Course IV. Outdoor Landscape Sketching and Architectural Details in "Black and White," Sepia and Water Colors. Students who pursue this course must have completed Courses I and II.

Course V. A thorough course in Ornamental and Historical Design and Decorative Art, for students who have completed Courses I and II. *Freshman I and Junior III.* In order to take the work of the junior third term one must have completed at least as much drawing as is required of the scientific freshmen.

ELOCUTION.

Course I. Reading. *Freshman III.*

Course II. Voice Building and Interpretation. *Sophomore II.*

Course III. Interpretation, Expression, and Classification of Literature, Elements of Gesture. *Junior Class.*

Course IV. Applied Gesture, Oratory and Shakspere. *Senior Class.*

ENGLISH.

FOR UNDERGRADUATES.

Course I. (*a*) **Old English (Anglo-Saxon)** grammar and prose masterpieces. *Freshman I, Sc. and Lt.* Open as an elective to the juniors and seniors who did not take it as freshmen.

(*b*) **Old and Middle English Poetry.** *Freshman II, Sc. and Lt.* Open to those who have completed Course I (*a*).

(*c*) **Middle English Poetry,** culminating in the study of Chaucer. *Freshman III. Sc. and Lt.* Open to those who have completed Course I. (*a* and *b*).

(*d*) **History of Old and Middle English Literature,** with printed syllabi and topical work. *Sophomore I. Lt.* Open to those who have completed Course I. (*a* to *c*).

(*e*) **History of the English Language.** Lectures once a week, and textual with critical studies in Shakspere, three times a week. *Sophomore II, Lt. and Sc.* Open to those who have completed Course I (*a* to *d*) or Course II (*a*).

(*f*) **General Introduction to the History of Modern English Literature.** *Sophomore III. Cl. Sc. and Lt.* Open to those who have completed Course I (*a* to *e*) or Course II (*a*).

Course II. (*a*) **Old English (Anglo-Saxon)** elements and outline history of the English language. *Sophomore II. Cl. Sc. and Lt.* This term's work having been previously given in the third term of the freshman year, will not be given until the year 1894-5. In the mean time new students desiring to take any of the courses conditioned on this course, must pursue, as an equivalent Course I (*a*).

Course III. (*a*) **Applied English Etymology.** *Agricultural freshmen and foreign-speaking students I.*

(*b*) **Applied English Syntax.** *Agricultural freshmen and foreign speaking students II.*

Course IV. (*a*) **History of the Elizabethan Literature.** In place of this topic, in the year 1893-94, the general introduction to English literature will be given. *Junior I.* Open to those who have completed Course II (*a*).

(*b*) **Shakspere. King Lear, with general introduction to the tragedies.** *Junior II.* Open to those who have completed Courses II and IV (*a*).

(*c*) **Milton. Studies in Paradise Lost.** *Junior III.* Open to those who have completed Course II. (*a*) and Course I (*f*).

(*d*) **Literature in the United States in the Nineteenth Century.** *Senior I.* Open to those who have completed Courses II and IV (*a*).

(*e*) **Lectures on Oratory** by the President (1). Open to all seniors. Critical studies of the literary movements and of the authors at the opening of the nineteenth century (3). *Senior II.* Open to those who have completed Courses II and IV (*a*).

(*f*) **Philosophy of English and American Literature** from their rise to the present (3). *Senior III.* Open to those who have completed Courses II (*a*) and IV (*a*).

(*g*) **Lectures on Shakspere** by the President (1). *Senior III.* Open to all seniors.

(*h*) **Seminar for Original Research in American Literature** meets once a week throughout the senior year. Open to senior and graduate students.

FOR GRADUATES.

Course V. (*a*) **Old and Middle English including Chaucer;** see Course I (*a*, *b* and *c*.) Open to graduates who have never taken this work.

(*b*) **Gothic** in its relation to Modern Teutonic Philology, especially Old English. Dr. Joseph Wright's Primer of Gothic is made the basis for the work.

While individual students are always guided in any line of graduate work, classes will be formed, in 1893-94, only in two of the following subjects which a considerable number elect:

(*c*) **The Science and Art of Literary Criticism.**

(*d*) **Critical Studies** in the Literature of the Eighteenth Century.

(e) **Special Studies** in the late Victorian Literature. "Life and Letters of To-day."

(*f*) **Original Research** in American Literature.

(*g*) **The Evolution of English Prose** traced from its beginning to the present.

(*h*) **Comparative Literature** studied in its bearing upon English literature.

(*i*) Course IV (*b* to *f*) are open under certain conditions to those who have not pursued them in their undergraduate years.

FRENCH.

FOR UNDERGRADUATES.

Course I. Advanced Grammar and Composition. Various authors will be read: Racine, Corneille, Pascal, Feuillet, Daudet, Greville, Sand, etc. *Freshman I, II and III, and Sophomore I and III.* Open to Sc. and Lt. freshmen who have completed the French required for entrance.

Course II. French Begun. Whitney's French Course. Blouet's French Composition; Mme. Foa's Petit Robinson de Paris; Muller's Les Grandes Dècouvertes Moderr es; Fontaine's Historiettes Modernes. *Freshmen III. and Sophomore I and II. Lt.*

Course III. French Begun. Whitney's French Course; Blouet's Composition; Luquien's French Prose of Popular Science; Octave Feuillet; Lacombe's Petite Histoire de France; articles from recent scientific journals. *Freshman II and III and Sophomore I. Sc.*

Course IV. French Begun. Whitney's "Practical Course of French" or Brachet's "Historical French Grammar;" some of the writers of the French classical school: Pascal, Corneille, Montiesquieu, etc. *Sophomore I and II. Cl.*

Course V. (*a*) **Composition, Translation, Literature.** McMillan's Composition La Fontaine's Fables; Em. Souvestre's Philosophie Sous les Toits; Marcillac's Histoire de la Litterature Française; Lectures on the History of the French Language and Medieval Literature. *Junior I.*

(*b*) **Historic Anecdotes Translated from English into French.** Molière, Corneille, Merimèe; Gautier's "Scenes of Travel;" Lectures on the Renaissance Period and the Literature of the Seventeenth Century or the Classical School, *Junior II.*

(*c*) **Howell's Farce, "The Elevator," Translated into French.** Taine's Philosophie de l' Art en Italie et en Grèce; Lectures on the Literature of the eighteenth century, with a view to the causes of the French Revolution. *Senior II.*

(*d*) **Tableaux de la Revolution Francaise;** Guizot's Civilization en Europe; Howell's "A Letter of Introduction," translated into French; Lectures on the Modern Schools in Literature; romantic, realistic, impressionists, etc. *Senior III.*

Seminar work will be engaged in during the senior year in connection with the regular work of the class for the discussion of questions in the Philosophy of French Literature.

FOR GRADUATES.

Course VI. Romance Languages: (*a*) **Old French.** Morceaux Choises des Auteurs Française du Moyen Age, par L. Cledat. Some of the oldest mouuments of the French language such as Les Serments de Strasbourg; La Chanson de Roland; La Vie de Saint Alexis; Le Roman du Renard; Le Roman de la Rose (selection) translated into modern French and the laws of the phonetic changes studied. This course is especially valuable to students who wish to make a scientific study of the French element in English.

(*b*) A systematic study of some special topic, as: The Philosophy of the Nineteenth Century; the literature of the Eighteenth Century.

GEOLOGY.

FOR UNDERGRADUATES.

Course I. Elements of Geology. Physiographic, structural and dynamic. Text-book and lectures. *Senior I.*

Course II. Historical Geology. The classification of fossils and an examination of some invertebrates from the Minnesota Paleozoic formations. Text-book and lectures. *Senior II.* Open to those who have completed course I.

Course III. Petrology. Studies in the crystalline rocks and a review of the minerals constituting them. Lectures and practice. *Senior II.* Open to those who have completed course I and course I in Mineralogy.

Course IV. Paleontological Studies. Laboratory work, reading, field work and lectures on the evolution of geologic faunas and floras. *Senior III* Open to those who have completed courses I and II.

Course V. Petrological Studies. A continuation of course III. *Senior III.*

Course VI. Applied Geology. An outline of the economic relations of geology. Lectures and reading. *Senior III.* Open to those who have completed course I.

Course III is not open to students taking course II; course IV or course V cannot be taken by students electiug course VI.

Course VII. An Outline of General Geology, with practice in the identification of common rocks. Lectures. (*Once a week.*) *Senior I.*

FOR GRADUATES.

Course VIII. The Granitic Rocks of Central Minnesota, with such preliminary Mineralogical work as may be found necessary.

GERMAN.

FOR UNDERGRADUATES.

Course I. (*a*) **A Topical Review of the Grammar,** with oral and written exercises; history of Germany; Schiller's Wilhelm Tell; Heine's "Buch der Leider" and "Harzreise;" Mueller's "Geschichten des Deutschen Volkes." *Freshman I, II and III. Sc. and Lt.* Open to those who have completed the German required for entrance.

(*b*) **Gore's "Science Reader,"** with special attention to the acquiring of a vocabulary of scientific terms, as preparatory for technical literature. *Sophomore I. Lt.*

(*c*) **Becher's "Friedrich der Grosse;"** later German history. *Sophomore III. Lt.*

(*d*) **"Faust;"** Life and Works of Goethe; *Junior I.*

(*e*) **"Wallenstein;"** Life and Works of Schiller. *Junior II.* Essays are required of the class on subjects connected with the subjects studied in (*d* and *e*).

(*f*) **Lessing's "Laocoon;"** Life and Work of Lessing. *Senior II.*

(*g*) **Nibelungen Lied;** History of German Literature. *Senior III.* In connection with (*f* and *g*) there will be required collateral reading and essays, and lectures will be given upon subjects connected with the text.

Course II. German Begun. This course is designed to lay the foundation in language and literature. Special attention is given to pronunciation; elements of grammar, including oral and written exercises; smooth translation into English; memorizing selections of prose and poetry; conversation in German.
Freshman III, Sophomore I and II. Lt.
Freshman II and III and Sophomore I. Sc.
Sophomore I and II. Cl.

FOR GRADUATES.

Course III. Alternative courses.

(*a*) 1. **Nibelungen Lied.**

2. **History of German Literature** during the Twelfth and thirteenth Centuries.

(*b*) 1. **Lessing's Laocoon** and Dramaturgy.

2. **History of German Literature** from 1749 to 1832.

GREEK.

FOR UNDERGRADUATES.

Course I. Homer's Iliad 3 books. Smith's history of Greece, introduction and books I and II. Collateral reading in Grote's history of Greece. Part I. Greek composition; reading at sight. *Freshman I and II, three weeks.*

Course II. Xenophon's Symposium. Smith's history, book IV. Collateral reading in Grote's history, chapters 47 to 68. Greek prose composition; reading at sight. *Freshman II, nine weeks.*

Course III. Lysias. Smith's history, books V and VI. Collateral reading in Grote's history, chapters 78 to 90. Greek prose composition; reading at sight. *Freshman III.*

Course IV. Herodotus. Smith's history, books II and III. Collateral reading in Grote's history, Part II, chapters 1 to 47. Greek prose composition; reading at sight. *Freshman I.*

Course V. Xenophon's Memorabilia. Smith's history, book IV. Collateral reading in Grote's history, chapters 47 to 68. Greek prose composition; reading at sight. *Freshman II.*

Course VI. Demosthenes. Smith's history, book VI. Collateral reading in Grote's history, chapters 78 to 90. Greek prose composition; reading at sight. *Freshman III.*

Those candidates who have read Homer take the advanced courses, IV, V, VI, all others take courses I, II, III.

Throughout the Freshman year in all courses the syntax of the language is systematically reviewed, and special attention is directed to the derivation and composition of words.

Course VII. Plato.—Apology and Crito. Greek history; collateral reading; theses; reading at sight. *Sophomore I.*

Course VIII. Tragedy—Sophocles' Antigone, or one play of the other dramatists. Greek history; collateral reading; theses; reading at sight. *Sophomore III.*

Course IX. Archæology of Greek Art. Collateral reading; theses. *Junior I and II.*

Course X. Neo-Hellenic. Collateral reading; theses. *Junior III.*

Course XI. Lyric and Bucolic Poets. Collateral reading; theses. *Senior I.*

Course XII. Lectures on Greek Poetry, with select readings from the poets. *Senior II.*

Course XIII. Seminar in Greek Poetry. *Senior I, II and III.*

Course XIV. The Political Institutions, the Antiquities, and the Private and Public Life of the Greeks.

This course is given in short lectures distributed through the above courses, supplemented by collateral reading.

FOR GRADUATES.

Course XV. (*a*) **Greek Poetry**, epic, lyric, dramatic, bucolic, with the critical reading of authors.

(*b*) **Greek Oratory or History**, with the critical reading of authors.

HISTORY.

FOR UNDERGRADUATES.

Course I. Institutions of the Middle Ages in Europe. Lectures and assigned reading. The study of events is made subordinate to the study of institutions—especially such as have had an influence on modern life. Required of all students—*Freshman III Cl., Sophomore II Sc., Sophomore II Lt.*. For the year '93-'94, classical sophomores who have not pursued the study will take it with the literary section.

Course II. Institutions of England in the Middle Ages, from the Roman conquest to Henry VII. Topical research and lectures. The main study is directed toward the evolution of the English constitution. Required, but to be taken after Course I. *Sophomore II Sc., Sophomore Cl. and Lt. III.*

Course III. England Since the Renaissance. Topical research, essays, and lectures. The English constitution is traced to the end of the Napoleonic wars. Open to all who have completed Courses I and II. *Junior I.*

Course IV. The Political and Constitutional History of the United States, through the adoption of the Constitution. Lectures and topics involving original research. Courses I and II required, and Course III very desirable for preparation. *Junior II.*

Course V. Political and Constitutional History of the United States under the constitution. Investigation of selected topics. A continuation of Course IV. *Junior III.*

Course VI. American History. Selected topics and lectures. Open to all who have completed Courses I and II. *Junior III.*

Course VII. Seminar in American History; one period a week for three terms. Open only to juniors who intend to follow the long course in American history or to seniors who have taken that course. *Junior I, II and III.*

Course VIII. Modern European Politics. The work is introduced by lectures on the state of Europe before the French Revolution and the changes wrought by that movement. Then, grouping the studies so far as possible about the successive French revolutions, the four great central states are taken up in detail, by topics, with special attention to the reconstructions since 1848, to constitutions and to present political questions. Careful study is made of the constitutions of Switzerland and of the Scandinavian countries; and the other smaller states are passed over briefly in lectures. Students will have Wilson's *The State*, and are advised to have Müller, but the work will be done mainly in the library and largely with periodicals, year books, annual encyclopedias and the like. Open to all who have had Courses I and II. *Senior I.*

Course IX. Modern European Politics. Continued. The Eastern Question, Russia, the states of the Balkan peninsula, the Turk, England and her colonies, and European colonies in general. Open to all who have completed Courses I, II and III. *Senior II.*

Course X. Philosophy of History. Lectures and readings. Open to all who have completed four terms of history. *Senior III.*

FOR GRADUATES.

Course XI. (*a*) **Medieval Institutions of Europe.**

(*b*) **Constitutional History of England.**

(*c*) **Political History of the United States.**

(*d*) **Modern European Politics.**

(*e*) **The Philosophy of History.**

LATIN.

FOR UNDERGRADUATES.

Course I. Livy Books I and XXI with sight reading from other writers of history; construction of the latin sentence; composition of words, with special attention to laws of phonetic change; latin composition based on the text; rise and development of Roman institutions. *Freshman I and II.*

Course II. Plautus and Terence. Study of early Latin, language and literature; development of the drama; Latin composition. *Freshman III. Cl. and Lt.*

Course III. Horace. Study of his times, style and works; outline of the history of Roman literature. *Freshman III. Sc.*

Course IV. Horace. Study of Latin language and literature commenced in course II continued. *Sophomore I. Cl. and Lt.*

Course V. Tacitus and Pliny. Social life of the Romans in the late Republic and early Empire. *Sophomore II Cl. and III. Lt.*

Course VI. Cicero "De Natura Deorum," with selections from Lucretius; Religion of the Romans. *Junior I.*

Course VII. Outlines of Roman Law. Lectures, with translations, at sight, of texts illustrating the subject. *Junior III.*

Course VIII. Seneca. His ethical teachings; reading of his shorter essays. *Senior III.*

Course IX. Roman Satire, embracing a study of the elements and development of Satire with a comparison of the Roman writers in this field of literature. *Senior III.*

Course X. Roman Elegiac Poetry. Seminar once a week through the junior year.

FOR GRADUATES.

Course XI. (*a*) **Sanskrit.** Grammar and reader; story of Nala.
(*b*) **Roman Lyric Poetry.**

MATHEMATICS.

FOR UNDERGRADUATES.

Course I. Higher Algebra: simple equations, proportion, progression, variation, quadratic equations, simultaneous equations of the second degree, inequalities, binomial theorem, indeterminate co-efficients, and higher equations. *Freshman I.*

Course II. Logarithims and Plane and Spherical Trigonometry, with numerous applications. *Freshman II.*

Course III. Analytical Geometry: the conic sections, both by rectilinear and polar co-ordinates, producing equations of loci whose law of development is known, constructing and discussing such equations, transformation of co-ordinates, properties of loci by means of their equations. *Sophomore III. Sc., Junior I.*

Course IV. Differential Calculus: differentiation of algebraic and transcendental functions, development of functions, maxima and minima, treatment of tangents, subtangents, normals, subnormals, asymptotes, direction and rate of curvature, evolutes and envelopes. The text book is based on the infinitesimal method, but the fluxionary method is given orally, and the system fully developed. *Junior II.*

Course V. Integral Calculus: integration of the various forms, rectification of curves, quadrature of plane and curved surfaces, cubature of volumes, equations of loci by means of the Calculus. *Junior III.*

Course VI. Method of Least Squares: a study of the combination and adjustment of observations and the discussion of their precision as applied especially to Engineering, Physics and Astronomy. *Senior II.*

Course VII. Co-ordinate Geometry of Three Dimensions: the plane, the straight line in space, quadric surfaces, applications. *Senior III.*
Each of these courses requires all the preceding courses, except in case of the last, which requires only Coures I., II. and III.

FOR GRADUATES.

Course VIII. (*a*) 1. **Advanced work in Co-ordinate Geometry.**
2. **Advanced work in Differential Calculus.**
3. **Advanced work in Integral Calculus.**
4. **Quaternions.**

The following subjects are offered to those who do not elect them in their undergraduate years:

(*b*) 1. **Analytical Geometry.**
2. **Differential Calculus.**
3. **Integral Calculus.**
4. **Co-ordinate Geometry of Three Dimensions.**

MILITARY SCIENCE AND TACTICS.

(*a*) For instruction in military tactics and administration the students are organized into a Corps of Cadets, consisting of a battalion of Infantry and a platoon of Artillery.

A uniform of prescribed pattern is worn by all Cadets during drill.

The uniform consists of blouse, trousers, vest and cap, modeled after the U. S. Military Academy cadet uniform, and costs in Minneapolis about $20, and is as neat and economical dress as the student can obtain.

Military drill may be taken voluntarily by others outside the Freshman class, and to encourage this, as it is considered beneficial not only to the individual student, but, to the State generally, the extra work is considered by allowing a year's drill to count as one study in the third term of the Senior year. It is understood, however, that only one credit can be thus obtained.

Officers are selected by the Commandant of Cadets, and upon confirmation, receive commissions signed by the President of the University and bearing the official seal. In general they are taken from the senior and junior classes, are required to be good students in the other departments; of soldier-like bearing and force of character, and able to pass a creditable examination in Drill Regulations.

Military instruction is intended to be so conducted as to develop a soldier-like bearing, and for the spirit of gentlemanly courtesy, soldierly honor, and obedience to lawful authority, as well as to familiarize students with company and battalion manœuvers, guards, and the theoretical and practical use of fire arms.

On the graduation of each class, the Commandant will report to the Adjutant General of the Army the names of the graduates who have shown especial aptitude for the military service and furnish a copy thereof to the Adjutant General of the State

The names of the three most distinguished students in Military Science and Tactics will when graduated, be inserted in the U. S. Army Register and be published in General Orders from the Headquarters of the Army. Prefcrence being given to those so reported in selecting officers to fill vacancies in the U. S. Army. (See Inspector General's Report for 1891.)

(*b*) The Senior elective during the winter term is intended to introduce to those interested the elements of modern tactics and the art of war.

MINERALOGY.

FOR UNDERGRADUATES.

Course I. Crystallography and the physical characters of minerals; a study of the native elements; blowpipe analysis of the minerals forming our common rocks. Lectures and practice. *Junior I.*

Course II. Descriptive Mineralogy; blowpipe analysis of the ores of the metals. Lectures and practice. *Junior II.* Open to those who have completed Course I.

Course III. Quantitative Mineral Analysis; the assay of gold and silver ores. Lectures and practice. *Junior III.*

Course IV. The Physical Characters of Minerals Investigated; work with the goniometer and stauroscope. Lectures and practice. *Junior III.* Open to those who have completed Courses I and II. (Course IV is not open to students taking Course III.)

FOR GRADUATES.

Course V. The Granitic Rocks of central Minnesota, with such preliminary Mineralogical work as may be found necessary.

MUSIC.

Women who are sufficiently advanced in Music are allowed, under the conditions mentioned below, to substitute instrumental or vocal music for one study in the sophomore year, to be determined in each case by the general faculty, and to pursue it as an elective through two terms of the junior and two terms of the senior year.

For instrumental music, whatever the instrument, pupils must be sufficiently advanced to play, with facility and accuracy, the major scales and the equivalent of Czerny's Velocity Studies for the Piano. For vocal music, pupils must be able to read music with fair readiness, and have voice good enough to justify devoting time to the study. The student's fitness will be determined by examination.

A minimum of eight hours per week must be given to lessons and practice, the character of the work to be reported upon each term, as in the case of other studies.

The work is to be taken under instructors in the Northwestern Conservatory of Music, and the instruction is to be paid for by those receiving it. The number of instructors in the Conservatory permits quite a range of individual preference. The Conservatory makes special rates to the students of the University.

PEDAGOGY.

Course I. The Development of Child Mind and the methods by which the various subjects of education may be presented with effectiveness for the culture of intellectual power and character. *Senior I.*

Course II. The American School System, school law, organization of studies, supervision, school sanitation and associated subjects. *Senior II.*

Course III. Educational History and Theories as presented in the history of nations and in the philosophy and biographies of representative men of the time. [2] *Senior III.*

Instruction will be conducted by lectures and text-books, and by systematic observation of representative schools of all grades from the kindergarten to the high school, followed by detailed reports and discussions in the class room.

This course is offered by the University in the belief that the representatives of higher education, in their capacities of superintendent, principal and teacher, should be familiar with the principles of psychology applied to school organization and instruction as recognized by the advanced thought of the time.

PHILOSOPHY.

FOR UNDERGRADUATES.

Course I. Elements of Logic [1.] Lectures. *Freshman II.*

Course II. Philosophy of Nature [1,] Lectures. *Sophomore I.*

Course III. Introduction to Psychology [1.] Lectures. *Sophomore II.*

Course IV. Introduction to Ethics [1,] Lectures. *Sophomore III.*

Course V. General Psychology [3.] Text book, James Psychology Briefer Course, supplemented by lectures and assigned reading. *Junior I.* Must be accompanied by Course VI.

Course VI. Anatomy and Physiology of the Nervous System [1]. Lectures, with demonstrations by charts, models and clinics. *Junior I.*

Course VII, General Psychology, Continuation of Course V. *Junior II.*

Course VIII. Greek and Christian Ethics, with a Sketch of Greek and Medieval Philosophy. Lectures, with collateral reading; and the critical study of books I, IV, IX and X of Aristotle's Ethics. *Junior III.* Open to those who have completed Course VII.

Course IX. Logic. The principles of deductive and inductive inference. *Junior III.*

Course X. Experimental Psychology. Lectures and laboratory work. *Senior III.* Open to those who have completed the courses in general psychology.

Course XI. The History of Modern Philosophy. Lectures with collateral reading. Theses, upon some philosopher and philosophical masterpiece. *Senior I.* Open to those who have completed Course VIII.

Course XII. Aesthetics [2 or 4.] "Kedney's Hegel's, Aesthetics," with lectures and assigned reading. *Senior I.* Open to those who have completed Course VII.

Course XIII. Ethics; the Principles of Morality, With Special Reference to Modern Theories. Seminar method; theses and discussions. *Senior II.* Open to those who have completed Course VIII.

Course XIV. Philosophy of Religion. Caird's Evolution of Religion with lectures. *Senior III.*

Course XV. Social Ethics. Lectures. *Senior III.*
Course XV. will not be given in '93-94, but may be expected in '94-95. It must be preceded by Course XIII.

FOR GRADUATES.

Course XVI. The Philosophy of Kant. Systematic study of the relation of Kant to the development of modern philosophy. Most important parts of the three *Critiques* will be read and discussed. Special course of collateral reading will be followed and reported upon by each individual. ***First term. Twice a week.***

Course XVII. Advanced Logic. Study of principles. Systematic individual investigation, with reports. Bradley's Principles of Logic. Bosanquet's Logic will be taken as the basis of work. *Second term. Twice a week.*

Course XVIII. Ultimate Psychological Problems. Application of metaphysical principles. Each student will make special study of one problem. Theses. *Third term. Twice a week.*

The graduate courses are intended for those who have made a special study of philosophy in the undergraduate years, and have acquired considerable power for independent work. They are not open to undergraduates, save in cases of very exceptional proficiency and by special permission.

PHYSICS.

FOR UNDERGRADUATES.

Course I. General Physics. Recitations and experimental lectures on mechanics, sound, heat, light, electricity and magnetism. *Freshman, II, Sophomore, I, II, III. Sc.*

Course II. Molecular Physics. Recitations and experimental lectures on sound, heat, light, electricity and magnetism. *Sophomore Engineers, I, II, III.*

Course III. General Physics. Recitations and experimental lectures on elementary physics. *Freshman, III, and Sophomore, I. Cl. and Lt.*

Course IV. Practical Physics. Laboratory practice, involving accurate physical measurements, particularly in electricity and magnetism. Open to those who have completed Course I. *Junior, I, II, III.*

Course IV. Practical Physics. Laboratory practice for those who have completed Course III. *Junior, I, II and III.*

Course V. Practical Physics. Laboratory work for engineering students who have completed Course II. *Junior Engineers, I, II.*

FOR GRADUATES AND UNDERGRADUATES.

Course VI. Advanced Physics. Some special department of physics will be handled each term. The work of the first term of 1893-94 will be mechanics of solids, with particular attention to the movements of inertia, determination of the force of gravity, and similar questions. Open to those who have completed courses I, II or III and who have taken calculus.

POLITICAL SCIENCE.

FOR UNDERGRADUATES.

Course I. Economics. (*a*) **Elements of Private Economics.** The aim is to thoroughly inculcate established doctrine and show the nature of questions still unsettled. *Junior I.*

(*b*) **Economic History.** This study comprises discussions of such specialties as population, wage fund, rent, value, etc. Open to students who have Course I (*a*). *Senior I.*

(*c*) **American Public Economy.** The object is to open the subjects of American administration and finance. As time may allow such particular topics as money, banking, the national debt, protection, public education, transportation and land policy will be treated. Open to students who have completed Course I (*a*). *Senior III.*

Course II. Politics. (*a*) **The State and the Government.** A descriptive treatment of these institutions, with discussions of their development, theories, ends, etc. *Junior II.*

(*b*) **The Law and the Constitution.** The construction and contents of the constitutions of modern free States, with an introductory outline of the elements of law. *Junior III.*

(*c*) **Public International Law.** An elementary course open to students who have completed Course I. (*a*) *Senior III.*

Course III Political Science Seminar. Meets weekly through the year. Open to Seniors under the general regulations concerning seminars.

Course IV. Principles, Elements and History of Sociology, with discussions of crime, pauperism, prison reform, etc., [2.] *Senior III.*

FOR GRADUATES.

Course V. The particular subjects of investigation are selected by individuals or groups after consultation with the professor.

RHETORIC.

Course I. English Composition With Elements of Rhetoric. *Fresh. III., Soph. I.*

Course II. Speeches, Toasts Etc. *Sophomore III.*

Course III, Literary Criticism. Study of models of English in poetry, oratory, fiction, etc., with critical essays. Open to students who have completed Course I. *Junior I, II.*

Course IV. Essays Upon Art Subjects, Open to students who have completed Course I. *Junior III.*

SCANDINAVIAN.

Course I. Norwegian. Smith & Horneman's Norwegian Grammar, Björnson's Synnöve Solbakken, Jonas Lei's Fortällinger og Skildringer fra Norge, Henrik Ibsen's Fruen fra Havet; lectures on Ibsen and the drama read, Björnson's Fiskejenten; the poems therein committed to memory. Björnson's En Glad Gut, Blackboard and oral exercises. *Junior I, II and III, and Senior I and III.*

Course II. Swedish. Reading of easy Swedish texts. Blackboard and oral exercises. *Senior II.*

Course III. Norwegian. (Advanced work.) Njaal's Saga read and explained; lecture given on Old Icelandic Literature, Norse mythology and history. Literature of Norway from 1814 to the present time; lectures and recitations in the history of Norway. *Senior I. and II.*

Course IV. Old Icelandic. Nygaard's Grammar. Reader, selections from the Sagas read and explained; lectures on the history of the Norwegian language. [2.] *Senior II and III.*

TEACHERS' COURSE.

The University offers a special two years' course designed to furnish preparation for teaching, to those who cannot complete a full university course.

ADMISSION.

To be admitted to this course the applicant must present satisfactory evidence, either by presenting certificates or taking examinations, of having completed such subjects as are introductory to the line or lines of study they elect; for instance, if they elect mathematics, they shall be examined in entrance mathematics; if history, then entrance history; if science, then entrance science; if English, then entrance English; if Latin, then entrance Latin; if Greek, then entrance Greek; if German or French, then entrance German or French.

COURSE OF STUDY.

The work consists of two terms of Psychology, two and one-half terms of Pedagogy, five of the sub-courses mentioned below, and four terms of other work selected from the regular curriculum, in all, twenty three and one-half terms of work.

SUB-COURSES.

History	3 Terms	Chemistry	3 Terms
English Literature .	3 "	Physics	3 "
Latin	3 "	Physiology	3 "
German	3 "	Botany	3 "
French	3 "	Rhetoric, English Comp. and El'cut'n	3 "
Mathematics and Astronomy . . .	3 "	Drawing	3 "

CERTIFICATE.

A certificate will conferred upon all who satisfactorily complete the work of the course outlined above.

THE SUMMER SCHOOL.

The University summer school will open Wednesday, July 26th, and continue in session for four weeks, until August 23d.

This school is especially designed for teachers interested in higher education. Instruction will be offered in Latin, English Literature, English History, History, of the United States, Pedagogy, Psychology, Chemistry, Physics, Animal Biology, Botany, Astronomy, Physical Culture, Drawing and probably in some other branches.

In the laboratory subjects, students will be permitted to devote four or five hours a day to one subject, if they so desire. In most cases instruction will be conducted by members of the faculty of the University.

Circulars containing full information, will be sent free to any address, after June 1st. Address the Registrar, care of the University of Minnesota.

SPECIAL STUDENTS.

Persons of mature years and judgment may be admitted to pursue subjects to be selected from the regular course of study. The subjects are arranged in groups. Special students must confine their work to one or two of the groups as tabulated below. All applicants, as conditional to their admission as special students, shall pass an examination in so many of the subjects known as requisites for entrance to the regular course of study, as properly belong to, or are naturally introductory to the line or lines of study they have selected; for instance, if they have elected mathematics, they shall be examined in entrance mathematics; if history, then entrance history; if science, then entrance science; if English studies or a modern language, then entrance English: if Latin, then entrance Latin, if Greek, then entrance Greek.

The grouping of the subjects is as follows:

I. Modern Philology—English, French, German, Scandinavian.
II. Classical Philology—Greek, Latin.
III. Comparative Philology—
IV. Biological Science—Botany, Zoloögy, Physiology, Paleontology.
V. Physical Science—Geology, Chemistry, Physics, Mineralogy.

VI. MATHEMATICS—Algebra, Trigonometry, Co-ordinate Geometry, Calculus, Astronomy.
VII. HISTORY—
VIII. POLITICAL SCIENCE—Political Economy, National Economy, International Law.
IX. PHILOSOPHY—Logic, Psychology, Ethics, History of Philosophy.
X. DRAWING—

Candidates for admission to pursue special studies make a further application on a blank provided for that purpose. This application must be presented in person to a committee of the General Faculty, Maria L. Sanford, Chairman. This application, when approved, is to be placed on file with the Registrar. Special students desiring to change their lines of study must again present their application to the committee for approval. All special students must renew their application at the beginning of each year.

CHOOSING OF COURSES.

The courses of this college are open, free of all charges for instruction, to all persons over fourteen years of age, whether residents of the State or not.

Applicants are free to select their courses of study on admission, but cannot thereafter change them, except as allowed by vote of the General Faculty.

DAILY ROUTINE.

As a general rule each student has sixteen exercises a week, besides rhetorical work, which comes but once in the week.

Monday is taken as a holiday and the morning session begins at 8 o'clock. A general assembly of students and Faculty is held each day at 10 o'clock, at which there are brief and simple religious exercises.

EXAMINATIONS.

At the close of each term examinations are held in the studies of the term. In order to be "passed" the student must obtain seventy-five per cent.

In determining the standing of a student in any subject the result of his daily work on that subject is combined with the result of the final examination in the ratio of two to one.

Any student who has earned a term mark of eighty-five per cent. is excused from the final examination.

Students who unsuccessfully pursue a subject are reported by the professor as "incomplete," "conditioned," or as having "failed." "Incomplete" work may be made up at the convenience

of the professor concerned ; "conditions may be made up within two terms ; "failures" must be taken over in class. The examinations for conditioned students are held at the beginning of the fall term, in the work of the fall term ; at the beginning of the winter term, in the work of the winter term, and at the beginning of the spring term, in the work of the spring term. Conditions of any term that are not made up by the beginning of that term become failures and must be taken in class.

A student who at any time is deficient in more than three studies of five hours per week, or four studies of four hours per week, loses his class rank and is regarded as a member of the next lower class.

Students whose absence in any term exceed four weeks, in the aggregate, are not permitted to take the term examinations without special permission of the General Faculty.

REGULATIONS REGARDING SEMINARS AND HONORS.

Honors are given for special work in departments on the following basis :

1. The student must have attained in his course at the close of the second term senior year, a general average of not less than 90 per cent.
2. He must have attained not less than 90 per cent. in the department selected.
3. He must have taken at least three (3) terms of electives in the department selected.
4. He must have completed, in the department selected, seminar or individual work of high grade, equivalent in amount to one full term of regular work in one subject.
5. No student is allowed to enter upon this seminar work without a general standing of least 85 per cent. at the time when he begins the work.
6. Double honors may be secured by taking seminar work in two departments.

Seminar work does not count in a course for a degree.

GRADUATION.

Students completing courses of study to the satisfaction of the faculty of the college, are entitled to receive the appropriate baccalaureate degrees.

Any person may undergo, at suitable times, examination in any subject ; and if such person pass in all the studies and exercises of a course, he is entitled to the appropriate degree.

THE COLLEGE OF

ENGINEERING, METALLURGY AND THE MECHANIC ARTS

The College of Engineering, Metallurgy and the Mechanic Arts.

THE FACULTY.

CYRUS NORTHROP, LL. D., *President.*
CHRISTOPHER W. HALL, M. A., *Dean and Professor of Geology and Mineralogy.*
JOHN G. MOORE, B. A., *Professor of German.*
JOHN F. DOWNEY, M. A., C. E., *Professor of Mathematics and Astronomy.*
JAMES A. DODGE, Ph. D., *Professor of Chemistry.*
CHARLES W. BENTON, B. A., *Professor of French.*
FREDERICK S. JONES, B. A., *Professor of Physics.*
WILLIAM R. HOAG, C. E., *Professor of Civil Engineering, in charge of Road and Sanitary Engineering and Geodesy.*
WILLIAM R. APPLEBY, B. A., *Professor of Mining and Metallurgy.*
GEORGE D. SHEPARDSON, A. M., M. E., *Professor of Electrical Engineering.*
CHARLES F. SIDENER, B. S., *Assistant Professor of Chemistry.*
HARRY E. SMITH, M. E., *Assistant Professor of Mechanical Engineering.*
FRANCIS P. LEAVENWORTH, M. A., *Assistant Professor of Astronomy.*
JOEL E. WADSWORTH, C. E., *Assistant Professor of Civil Engineering in charge of Mechanics and Structural Engineering.*
WILLIAM S. PATTEE, LL. D., *Lecturer on Mining Law.*
WILLIAM A. PIKE, B. S., *Lecturer on Mechanical Engineering.*
HENRY T. ARDLEY, *Principal of the School of Design.*
AMELIA I. BURGESS, *Instructor in Free Hand Drawing.*
HARRY W. JONES, *Instructor in Architecture.*
PETER CHRISTIANSON, B. S., *Instructor in Assaying.*
JAMES M. TATE, *Instructor in Wood Work,*
JAMES H. GILL, B. M. E., *Instructor in Iron Work.*
FREDERICK W. SARDESON, M. S., *Scholar in Geology.*
CHARLES P. BERKEY, B. S., *Scholar in Mineralogy.*
GEORGE B. COUPER, *Scholar in Mechanical Drawing.*
LAURA MAY DENNISON, *Scholar in Freehand Drawing.*

SPECIAL LECTURERS FOR 1893-94.

Civil Engineering—J. T. Fanning, F. W. Cappelen, W. de la Barre, C. F. Loweth, A. W. Munster, Geo. L. Wilson.
Electrical Engineering—C. K. Stearns, F. N. Armour.
Mechanical Engineering—Aid Collins, C. J. Enger, Wm. A. Pike.
Architecture—W. Channing Whitney, Cass Gilbert, C. A. Reed.

HARRY W. DIXON, *Engineer.*
JOHN F. CATES, *Engineer.*

In this college there are seven regular courses of study, viz: Civil Engineering, Mechanical Engineering, Electrical Engineering, Architecture, Mining, Chemistry and Metallurgy leading to the corresponding baccalaureate degrees.

The School of Design offers a three years' course in practical, ornamental design and elementary art to students of mature years who can pass an examination in elementary drawing.

Special students are admitted to pursue, under the direction of the Faculty, one or two distinct lines of study selected from some regular course. Such students must be persons of mature years. All applicants, as conditional to their admission as special students, shall pass an examination in so many of the subjects known as requisites for entrance to the regular course of study, as properly belong to or are naturally introductory to the line or lines of study they have elected.

Candidates for admission as special students make application to Professor James A. Dodge, by whom appointments for the necessary examinations will be made. All special students must renew their application at the beginning of each year, but a re-examination will not be necessary if a satisfactory record of the work previously done can be shown.

ADMISSION.

The requirements for admission are alike for all the regular courses in this college, and are as follows:

English Grammar and Composition With Essay—The essentials of grammar will be required, with sufficient knowledge of composition to enable the candidate to write with ease and precision a business letter or draft a series of resolutions. The essay will be on a subject announced at the examination, preparation for which will require a knowledge of the right use of rhetorical figures and of what is meant by precision, brevity and style. Preparation for this essay will require the careful reading of Shakspere's Julius Cæsar, Goldsmith's Vicar of Wakefield, Scott's Lady of the Lake and Irving's Sketch Book. Equivalents of these four books will be accepted. [6]

Algebra—Elementary and Higher, the latter to include factoring, highest common divisor, lowest common multiple, fractions, involution, evolution and radicals. [3]

Geometry—Plane and solid. Olney's text-books or their equivalent. [2]

History—History of the United States and History of Greece and Rome. [4]

Physiology—Martin's Human Body, briefer course or its equivalent. [2]

Natural Philosophy—Gage's Introduction to Physical Science or its equivalent. [2]

Chemistry—The non-metallic elements as presented in such an elementary text-book as Cooley's or Remsen's. [2]

Botany—Phanerogamic, Gray's Lessons and Manual or Wood's Class Book. [1]

Drawing—Two terms of Mechanical or Freehand Drawing.

German—Meissner's German Grammar (Parts I, II, III), Boisen's German Prose and Buchheim's German Poetry for beginners [2], or

French—Chardenal's Course, first two books of Telemaque. [2]

English—Latin Elements of English and History of English Literature. [4]

While in the place of the English and German or French, as above stated, Latin may be offered, it is urged that candidates present the German or French and thus come better equipped for the modern language work of Freshman and Sophomore years.

By recent action of the General Faculty, in 1894 and thereafter only Freehand Drawing will be accepted for admission to this college.

[The figures in brackets in the foregoing list of subjects required for admission, state the number of *units of work*, *i.* e. the number of terms in the high school, necessary for the average student to make the required preparation.]

ADVANCED STANDING.

Candidates for advanced standing must pass a satisfactory examination for admission and also upon those studies pursued by the class they propose to enter.

COURSES OF STUDY.

FRESHMAN YEAR—FIRST TERM.

CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING.	ARCHITECTURE.	MINING.	CHEMISTRY.	METALLURGY.
A	**Algebra, 5.**	**Algebra, 5.**	**A gebra, 5.**	**Algebra, 5.**	**Algebra, 5.**	**Algebra, 5.**
Simple,quadratic and higher equations.	Simple,quadratic and higher equations.	Simple,quadratic and higher equations.	Simple,quadratic and higher equations.	Simple,quadratic and higher equations.	Simple,quadratic and higher equations.	Simple,quadratic and higher equations.
German, 5.	**German, 5.**	**German, 5.**	**German, 5.**	**German, 5.**	**German, 5.**	**German, 5.**
Schiller, Marie Stuart or Wilhelm Tell.	Schiller, Marie Stuart or Wilhelm Tell.	Schiller, Marie Stuart or Wilhelm Tell.	Schiller, Marie Stuart or Wilhelm Tell.	Schiller, Marie Stuart or Wilhelm Tell.	Schiller, Marie Stuart or Wilhelm Tell.	Schiller, Marie Stuart or Wilhelm Tell.
or	or	or	or	or	or	or
French, 5	**French, 5.**	**French, 5.**	**French, 5.**	**French, 5.**	**French, 5.**	**French, 5.**
Advanc'd grammar; reading of authors.	Advanc'd grammar; reading of authors.	Advanc'd grammar; reading of authors	Advanc'd grammar; reading of authors.	Advanc'd grammar; reading of authors.	Advanc'd grammar; reading of authors.	Advanc'd grammar; reading of authors.
Chemistry, 4.	**Chemistry, 4.**	**Chemistry, 4.**	**Chemistry, 4.**	**Chemistry, 4.**	**Chemistry, 4.**	**Chemistry, 4.**
The metallic elements; lectures and laboratory exercises.	The metallic elements; lectures and laboratory exercises.	The metallic elements; lectures and laboratory exercises.	The metallic elements; lectures and laboratory exercises.	The metallic elements; lectures and laboratory exercises.	The metallic elements; lectures and laboratory exercises.	The metallic elements; lectures and laboratory exercises.
Drawing, 4.	**Drawing, 4.**	**Drawing, 4.**	**Drawing, 4.**	**Drawing, 4.**	**Drawing, 4.**	**Drawing, 4.**
Freehand; models; lettering.	Freehand; models; lettering.	Freehand; models; lettering.	Freehand; models; lettering.	Freehand; models; lettering.	Freehand; models; lettering.	Freehand; models; lettering.
Military Drill, 3.	**Military Drill, 3.**	**Military Drill, 3.**	**Military Drill, 3.**	**Military Drill, 3.**	**Military Drill, 3.**	**Military Drill, 3.**

Students taking German in Freshman year must take French in the Sophomore year, and vice versa.

FRESHMAN YEAR—SECOND TERM.

CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING.	ARCHITECTURE.	MINING.	CHEMISTRY.	METALLURGY.
Trigonometry, 5.	**Trigonometry, 5.**	**Trigonometry, 5.**	**Trigonometry, 5.**	**Trigonometry, 5.**	**Trigonometry, 5.**	**Trigonometry, 5.**
Logarithms; plane and spherical trigonometry.	Logarithms; plane and spherical trigonometry.	Logarithms; plane and spherical trigonometry.	Logarithms; plane and spherical trigonometry.	Logarithms; plane and spherical trigonometry.	Logarithms; plane and spherical trig onometry.	Logarithms; plane and spherical trigonometry.
German, 4.	**German, 4.**	**German, 4.**	**German, 4.**	**German, 4.**	**German, 4.**	**German, 4.**
Mueller, Geschichte des deutschen Volkes.	Mueller, Geschichte des deutschen Volkes.	Mueller, Geschichte des deutschen Volkes.	Mueller, Geschichte des deutschen Volkes.	Mueller, Geschichte des deutschen Volkes.	Mueller, Geschichte des deutschen Volkes.	Mueller, Geschichte des deutschen Volkes.
or	or	or	or	or	or	or
French, 4.	**French, 4.**	**French, 4.**	**French, 4.**	**French, 4.**	**French, 4.**	**French, 4.**
Advancedgrammar; reading of authors.	Advancedgrammar; reading of authors.	Advancedgrammar; reading of authors.	Advancedgrammar; reading of authors.	Advancedgrammar; reading of authors.	Advancedgrammar; reading of authors.	Advancedgrammar; reading of authors.
Chemistry, 4.	**Chemistry, 4.**	**Chemistry, 4.**	**Chemistry, 4.**	**Chemistry, 4.**	**Chemistry, 4.**	**Chemistry, 4.**
Qualitative analysis.	Qualitative analysis.	Qualitative analysis.	Qualitative analysis.	Qualitative analysis.	Qualitative analysis.	Qualitative analysis.
Drawing, 5.	**Drawing, 5.**	**Drawing, 5.**	**Drawing, 5.**	**Drawing, 5.**	**Drawing, 5.**	**Drawing, 5.**
Instrumental; round writing.	Instrumental; round writing.	Instrumental; round writing.	Sketching.	Instrumental; round writing.	Instrumental; round writing.	Instrumental; round writing.
Carpentry, 2.	**Carpentry, 2.**	**Carpentry, 2.**	**Carpentry, 2.**	**Carpentry, 2.**	**Carpentry, 2.**	**Carpentry, 2.**
Care of tools; exercises.	Care of tools; exercises.	Care of tools; exercises.	Care of tools; exercises.	Care of tools; exercises.	Care of tools; exercises.	Care of tools; exercises.

FRESHMAN YEAR—THIRD TERM.

CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING.	ARCHITECTURE.	MINING.	CHEMISTRY.	METALLURGY.
German, 4.	**German, 4.**	**German, 4.**	**German, 4.**	**German, 4.**	**German, 4.**	**German, 4.**
Heine, Harzreise; Buch der Lieder	Heine, Harzreise; Buch der Lieder	Heine, Harzreise; Buch der Lieder	Heine, Harzreise; Buch der Lieder	Heine, Harzreise; Buch der Lieder	Heine, Harzreise; Buch der Lieder	Heine, Harzreise; Buch der Lieder
or	or	or	or	or	or	or
French, 4.	**French, 4.**	**French, 4.**	**French, 4.**	**French, 4.**	**French, 4.**	**French, 4.**
Reading of authors and French composition.	Reading of authors and French composition.	Reading of authors and French composition.	Reading of authors and French composition.	Reading of authors and French composition.	Reading of authors and French composition.	Reading of authors and French composition.
Chemistry, 4.	**Chemistry, 4.**	**Chemistry, 4.**	**Chemistry, 4.**	**Chemistry, 4.**	**Chemistry, 4.**	**Chemistry, 4.**
Qualitative analysis completed.	Qualitative analysis completed.	Qualitative analysis completed.	Qualitative analysis completed.	Qualitative analysis completed.	Qualitative analysis completed.	Qualitative analysis completed.
Surveying, 5.	**Surveying, 5.**	**Surveying, 5.**	**Surveying, 5.**	**Surveying, 5.**	**Surveying, 5.**	**Surveying, 5.**
Methods and instruments; office and field practice.	Methods and instruments; office and field practice.	Methods and instruments; office and field practice.	Methods and instruments; office and field practice.	Methods and instruments; office and field practice.	Methods and instruments; office and field practice.	Methods and instruments; office and field practice.
Drawing, 5.	**Drawing, 5.**	**Drawing, 5.**	**Drawing, 5.**	**Drawing, 5.**	**Drawing, 5.**	**Drawing, 5.**
Isometric and cabinet projection and perspective.	Sketching and details.	Sketching and details.	Isometric and cabinet projection and perspective.	Sketching and details.	Isometric and cabinet projection and perspective.	Sketching and details.
Military Drill, 3.	**Military Drill, 3.**	**Military Drill, 3.**	**Military Drill, 3.**	**Military Drill, 3.**	**Military Drill, 3.**	**Military Drill, 3.**

SOPHOMORE YEAR—FIRST TERM.

CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING.	ARCHITECTURE.	MINING.	CHEMISTRY.	METALLURGY.
Analytical Geometry, 5.	**Analytical Geometry, 5.**	**Analytical Geometry, 5.**	**Analytical Geometry, 5.**	**Analytical Geometry, 5.**	**Analytical Geometry, 5.**	**Analytical Geometry, 5.**
Conic sections; equations.	Conic sections; equations.	Conic sections; equations.	Conic sections; equations.	Conic sections; equations.	Conic sections; equations.	Conic sections; equations,
Topography, 4.	**Carpentry and Pattern Making, 5**	**Carpentry and Pattern Making, 5**	**Carpentry and Pattern Making, 5**	**Topography, 4.**	**Topography, 4.**	**Topography, 4.**
Methods and instruments; field work.				Methods and instruments; field work.	Methods and instruments; field work.	Methods and instruments; field work.
Draughting, 2.	**Draughting, 2.**	**Draughting, 2.**	**Elements of Architecture, 2.**	**Draughting, 1.**	**Draughting, 1.**	**Draughting, 1.**
Platting topographic notes.	Lettering.	Lettering.		Platting topographic notes.	Platting topographic notes.	Platting topographic notes.
Physics, 4.	**Physics, 4.**	**Physics, 4.**	**Physics, 4,**	**Physics, 4.**	**Physics, 4.**	**Physics, 4.**
Mechanics of liquids and gases; heat.	Mechanics of liquids and gases; heat.	Mechanics of liquids and gases; heat.	Mechanics of liquids and gases; heat.	Mechanics of liquids and gases; heat.	Mechanics of liquids and gases; heat,	Mechanics of liquids and gases; heat.
				Mineralogy, 4.	**Mineralogy, 4.**	**Mineralogy, 4.**
				Crystallography; physical and descriptive mineralogy; blow pipe analysis.	Crystallography; physical and descriptive mineralogy; blow pipe analysis.	Crytallography; physical and descriptive mineralogy; blow pipe analysis.
Military Drill, 3.	**Military Drill, 3.**	**Military Drill, 3.**	**Military Drill, 3.**	**Milltary Drill, 3.**	**Military Drill, 3.**	**Military Drill 3.**

SOPHOMORE YEAR—SECOND TERM.

CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING.	ARCHITECTURE.	MINING.	CHEMISTRY.	METALLURGY.
Differential Calculus, 5.	**Differential Calculus, 5.**	**Differential Calculus, 5.**	**Differential Calculus, 5.**	**Differential Calculus, 5.**	**Differential Calculus, 5.**	**Differential Calculus, 5.**
French, 4.	**French, 4.**	**French, 4.**	**French, 4.**	**French, 4.**	**French, 4.**	**French, 4.**
Grammar and composition, continued.	Grammar and composition, continued.	Grammar and composition, continued.	Grammar and composition, continued.	Grammar and composition, continued.	Grammar and composition, continued.	Grammar and composition, continued.
or	or	or	or	or	or	or
German, 4.	**German, 4.**	**German, 4.**	**German, 4.**	**German, 4.**	**German, 4.**	**German, 4.**
Boisen's Prose and Buchheim's Poetry.	Boisen's Prose and Buchheim's Poetry.	Boisen's Prose and Buchheim's Poetry.	Boisen's Prose and Buchheim's Poetry.	Boisen's Prose and Buchheim's Poetry.	Boisen's Prose and Buchheim's Poetry.	Boisen's Prose and Buchheim's Poetry.
Descriptive Geometry, 5.	**Descriptive Geometry, 5.**	**Descriptive Geometry, 5.**	**Descriptive Geometry, 5.**	**Descriptive Geometry, 3.**	**Descriptive Geometry, 3.**	**Descriptive Geometry, 3.**
Recitations; original problems.	Recitations; original problems.	Recitations; original problems.	Recitations; original problems.	Recitations; original problems.	Recitations; original problems.	Recitations: original problems.
Physics, 4.	**Physics, 4.**	**Physics, 4.**	**Physics, 4.**	**Physics, 4.**	**Physics, 4.**	**Physics, 4.**
Electricity and magnetism.	Electricity and magnetism.	Electricity and magnetism.	Electricity and magnetism.	Electricity and magnetism.	Electricity and magnetism.	Electricity and magnetism.
			Elements of Architecture, 2.	**Draughting, 1.**	**Draughting, 1.**	**Draughting, 1.**
Engineering Instruments, 3.	**Pattern Work, 2.**	**Pattern Work, 2.**	**Design from Dictation 1.**	Platting topographic notes.	Platting topographic notes.	Platting topographic notes.
Lectures and text-book.				**Mineralogy, 4.**	**Mineralogy, 4.**	**Mineralogy, 4.**
				Descriptive mineralogy continued; blow-pipe analysis.	Descriptive mineralogy continued; blow-pipe analysis.	Descriptive mineralogy continued; blow-pipe analysis.

SOPHOMORE YEAR—THIRD TERM,

CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING.	ARCHITECTURE.	MINING.	CHEMISTRY.	METALLURGY.
Integral Calculus, 5,	**Integral Calculus, 5.**	**Integral Calculus, 5.**	**Integral Calculus, 5.**	**Integral Calculus, 5.**	**Integral Calculus, 5.**	**Integral Calculus, 5.**
French, 4.	**French, 4.**	**French, 4.**	**French, 4.**	**French, 4.**	**French, 4.**	**French, 4.**
Grammar, with readings from authors.	Grammar, with readings from authors.	Grammar, with readings from authors.	Grammar, with readings from authors.	Grammar, with readings from authors.	Grammar, with readings from authors.	Grammar, with readings from authors.
or	or	or	or	or	or	or
German, 4.	**German, 4.**	**German, 4.**	**German. 4.**	**German, 4.**	**German, 4.**	**German, 4.**
Freitag: Die Journalisten.	Freitag: Die Journalisten.	Freitag: Die Journalisten.	Freitag: Die Journalisten.	Freitag: Die Journalisten.	Freitag: Die Journalisten.	Freitag: Die Journalisten.
Higher Surveying, 4.	**Pattern and Foundry work, 5.**	**Pattern and Foundry Work, 5.**	**Freehand Drawing, 5.**	**Chemistry, 4.**	**Chemistry, 4.**	**Chemistry, 4.**
Barometric leveling; Solar compass; plane-table.			Shades and shadows.	Quantitative analysis.	Quantitative analysis.	Quantitative analysis.
Physics, 4.	**Physics, 4.**	**Physics, 4.**	**Physics, 4.**	**Physics, 4.**	**Physics, 4.**	**Physics, 4.**
Sound and light	Sound and light	Sound and light	Sound and light	Sound and light	Sound and light	Sound and light
Field Work, 3.	**Draughting, 2.**	**Draughting, 2.**	**Design from Dictation, 2.**	**Assaying, 4.**	**Assaying, 4.**	**Assaying, 4.**
Reduction of notes.	Details.	Details.		Introductory; assay of reagents; gold and silver.	Introductory; assay of reagents; gold and silver.	Introductory; assay of reagents; gold and silver.

JUNIOR YEAR—FIRST TERM.

CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING.	ARCHITECTURE.	MINING.	CHEMISTRY.	METALLURGY.
Mechanics, 5.	**Mechanics, 5.**	**Mechanics, 5.**	**Mechanics, 5.**	**Mechanics, 5.**	**Mechanics, 5.**	**Mechanics, 5.**
Forces, centre of gravity, statics of rigid bodies, etc.	Forces, centre of gravity, statics of rigid bodies, etc.	Forces, centre of gravity, statics of rigid bodies, etc.	Forces, centre of gravity, statics of rigid bodies, etc.	Forces, centre of gravity, statics of rigid bodies, etc.	Forces, centre of gravity, statics of rigid bodies, etc.	Forces, centre of gravity, statics of rigid bodies, etc.
Curves and Earthworks, 5.	**Kinematics and Graphics, 5.**	**Kinematics and Graphics, 5.**	**History of Architecture, 2.**	**Geology, 4.**	**Geology, 4.**	**Geology, 4.**
Theories of section leveling; calculations.	Transmission of motion; graphic method of solving problems.	Transmission of motion; graphic method of solving problems.	**Perspective.**	General and dynamical, with a study of rocks.	General and dynamical, with a study of rocks.	General and dynamical, with a study of rocks.
Field Work, 5.	**Forge Work, 5.**	**Forge Work, 5.**	**Mineralogy, 4.**	**Chemistry, 4.**	**Chemistry, 4.**	**Chemistry, 4.**
Railroad work.			Crystallography, etc; lectures and laboratory work.	Quantitative analysis.	Quantitative analysis.	Quantitative analysis.
Mineralogy, 4.						
Crystallography, etc; lectures and laboratory work.	**Electrical Measurements, 3.**	**Electrical Measurements, 3.**	**Electrical Measurements, 3.**	**Assaying, 4.**	**Assaying, 4.**	**Assaying, 4.**
	Lectures and problems.	Lectures and problems.	Lectures and problems.	Gold, silver, lead, etc.	Gold, silver, lead, etc.	Gold, silver, lead, etc.
Physics, 2.	**Physics, 3.**	**Physics, 2.**	**Problem n e sign, 5.**	**Mining, 1.**		**Mining, 1.**
Laboratory problems.	Laboratory work.	aboratory work.		Excavations, tools, etc.		
Mining, 1.				**Metallurgy, 3.**	**Metallurgy, 3.**	**Metallurgy, 3.**
Excavations, tools, etc.				Introductory.	Introductory.	Introductory.
Technical Essay.	**Technical Essay.**	**Technical Essay.**	**Technical Essay.**	**Technical Essay.**	**Technical Essay.**	**Technical Essay.**

JUNIOR YEAR—SECOND TERM.

CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING.	ARCHITECTURE.	MINING.	CHEMISTRY.	METALLURGY.
Mechanics, 5. Materials; friction; stress and strain; girders, beams etc.	**Mechanics, 5.** Materials; friction; stress and strain; girders, beams etc.	**Mechanics, 5.** Materials; friction; stress and strain; girders, beams etc.	**Mechanics, 5.** Materials; friction; stress and strain; girders, beams etc.	**Mechanics, 5.** Materials; friction; stress and strain; girders, beams etc.	**Mechanics, 5.** Materials; friction; stress and strain; girders, beams etc.	**Mechanics, 5.** Materials; friction; stress and strain; girders, beams etc.
Stereotomy, 5. Masonry; arches			**Stereotomy, 5.** Masonry; arches	**Geology, 4.** Lithology; lectures and laboratory.	**Geology, 4.** Lithology; lectures and laboratory.	**Geology, 4.** Lithology; lectures and laboratory.
Railway Structures and Hydrography, 5.	**Physics, 5.** Laboratory practice.	**Physics, 5.** Laboratory practice.	**Planning and Details.** Wood and stone.		**Chemistry, 4.** Industrial Chemistry, inorganic.	
Mineralogy, 4. Descriptive Mineralogy continued; blowpipe analysis.	**Machine Work, 5.**	**Machine Work, 5.**	**Structures, 1.**	**Ore Testing and Dressing, 5.**		**Ore Testing and Dressing, 5.** **Mining, 2.**
Lectures on Drilling and Blasting, 2.	**Electrical Generators and Motors, 5.** Lectures and problems.	**Electrical Generators and Motors, 5.** Lectures and problems.	**Elective, 4 or 5.** **Problem in Design, 4.** **Perspective Pen Rendering, 1.**	**Lectures on Drilling and Blasting, 2.** **Metallurgy, 4.**	**Chemistry, 4.** Analysis of products. **Metallurgy, 4.** Slags; fluxes; iron and steel.	**Metallurgy, 4.** Slags; fluxes; iron and steel.
Technical Essay.	**Technical Essay.**	**Technical Essay.**	**Technical Essay.**	**Technical Essay.**	**Technical Essay.**	**Technical Essay.**

JUNIOR YEAR—THIRD TERM.

CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING.	ARCHITECTURE.	MINING.	CHEMISTRY.	METALLURGY.
Mechanics, 5.	Mechanics, 5.	Mechanics, 5.	Mechanics, 5.	Mechanics, 5.	Chemistry, 4.	Mechanics, 5.
Mechanics of fluids.	Mechanics of fluids.	Mechanics of fluids.	Mechanics of fluids.	Mechanics of fluids.	Organic chemistry, lectures.	Mechanics of fluids.
Materials of Engineering, 3.	Materials of Engineering, 3.	Materials of Engineering, 3.	Materials of Engineering, 3.	Materials of Engineering, 3.	Materials of Engineering, 3.	Materials of Engineering.
Lectures and testing.	Lectures and testing.	Lectures and testing.	Lectures and testing.	Lectures and testing.	Lectures and testing.	Lectures and testing.
Astronomy, 4.	Machine Design, 4	Machine Design, 4	Architectural Design and Modeling, 2.	Machine Design, 4	Machine Design, 4	Machine Design, 4
Time, latitude and longitude.	Text and problems.	Text and problems.		Text and problems.	Text and problems.	Text and problems.
				Mining, 3.	Organic Chemistry, 4.	Mining, 3.
			Perspective Pen Rendering, 1.	Tunneling; mineral properties.	Ultimate analysis.	
Lectures on Tunnelling, 3.	Machine Shop, 5.	Machine Shop, 3.	Ornamental Design, 2.	Metallurgy, 2.	Metallurgy, 2.	Metallurgy, 2.
					Iron and steel.	Iron and steel.
Roof and Bridge Trusses, 5.			Roof and Bridge Trusses, 5.			
Electrical Measurements, 3.	Electrical Measurements, 3.	Electrical Measurements, 3.		Applied Geology, 4	Applied Geology, 4	Applied Geology, 4
Laboratory practice.	Laboratory practice.	Laboratory practice.				
Technical Essay.	Technical Essay.	Technical Essay.	Technical Essay.	Technical Essay.	Technical Essay.	Technical Essay.

SENIOR YEAR—FIRST TERM.

CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING.	ARCHITECTURE.	MINING.	CHEMISTRY.	METALLURGY.
Geodesy, 4. Leveling; computation of geodetic positions; field notes.	**Thermo Dynamics, 5.** Nature of heat; measurements; engines; indicators; fuels.	**Thermo Dynamics, 5.** Nature of heat; measurements; engines; indicators; fuels.	**Problems in Design, 4.**	**Thermo Dynamics, 5.** Nature of heat; measurements; engines; indicators; fuels.	**Organic Chemistry, 4.** Proximate analysis.	**Thermo Dynamics, 5.** Nature of heat; measurements; engines; indicators; fuels.
				Mining, 4. Methods and machinery for extracting minerals and ores.		**Mining, 4.**
Railroad Work, 5. Preliminary and location surveys; construction; roads and pavements.	**Machine Work, 4.** **Valve Gear, 2.**	**Electrical Laboratory, 4.**	**History of Ornament, 1.**	**Metallurgy, 4.**	**Metallurgy, 4.** Gold and silver.	**Metallurgy, 4.** Gold and silver; various processes compared.
Geology, 1. Outline of physical geology.	**Geology, 1.** Outline of physical geology.	**Geology, 1.** Outline of physical geology.	**Geology, 4.** General Geology.		**Chemistry, 4.** Industrial chemistry, organic.	
Details of Iron Construction, 4. Study of actual structures.	**Designs, 4.**	**Electrical Designs, 2.**	**Details of Iron Construction, 4.** Study of actual structures.			
Field Work, 2. Base line measurement.		**Alternating Currents, 2.** Lectures.		**Electrical Measurements, 3.** Lectures and problems.	**Electrical Measurements, 3.** Lectures and problems.	**Electrical Measurements, 3.** Lectures and problems.
Graphic Statics, 4. or **Elective, 4.**	**Elective, 4.**	**Elective, 4.**	**Elective, 4.**	**Elective, 4.**	**Elective, 4.**	**Elective, 4.**
Law, 1.	**Law, 1.**	**Law, 1.**	**Law, 1.**	**Law, 1.**	**Law, 1.**	**Law, 1.**

SENIOR YEAR—SECOND TERM.

CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING.	ARCHITECTURE.	MINING.	CHEMISTRY.	METALLURGY.
Bridge Design, 5.	Steam Engines, 5. Steam engine design; application of principles to design and construction.	Steam Engines, 5. Steam engine design; application of principles to design and construction.	Bridge Design, 5.	Mining, 4. Prospecting; exploration, etc.	Chemistry, 5. Water analysis and gas analysis	Mining, 4.
Draughting and Technical reading, 2.	Experimental Mechanics, 5.	Experimental Mechanics, 5.	Problems in Design, 5.	Metallurgy, 3.	Metallurgy, 3. Copper and lead	Metallurgy, 3. Copper and lead
Sanitary Engineering, 4. City water supply; sewerage.	Electrical Laboratory, 3.	Electrical Laboratory, 3.	Plumbing and House Drainage, 2.	Electrical Generators and Motors, 5. Lectures and problems.	Chemical Philosophy, 4. Lectures and reading.	Electrical Generators and Motors, 5. Lectures and problems.
Stereotomy, 5. Preliminary problems; stone arches.	Electric Lights, 2.	Electric Lights, 2.	Office Work, 2. Building and Construction, 2.	Steam Engines and Motors, 5.		Steam Engines and Motors, 5.
Elective, 4.	Elective, 4.	Elective, 4.	Elective, 4.	Elective, 4.	Elective, 4.	Elective, 4.
Thesis, 1.	Thesis, 1.	Thesis, 1.	Thesis, 1.	Thesis, 1.	Thesis, 1.	Thesis, 1.

SENIOR YEAR—THIRD TERM.

CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING.	ARCHITECTURE.	MINING.	CHEMISTRY.	METALLURGY.
Designs and Specifications, 5.	**Designs and Specifications, 5.**	**Designs and Specifications, 5.**	**Designs and Specifications, 5.**	**Designs and Specifications, 5.**	**Designs and Specifications, 5.**	**Designs and Specifications, 5.**
	Experimental Mechanics and Shop Work, 4.	**Electrical Transmission, 4.** Lectures and problems.		**Mining, 4.** Mine engineering.	**Chemistry, 4.** Special problems.	**Mining, 4.**
Masonry, 4. Materials; foundations; retaining walls; arches; masonry dams.			**Masonry, 4.** Materials; foundations; retaining walls; arches.	**Metallurgy, 4.** **Geology, 4.** Special problems.	**Metallurgy, 4.** Zinc, mercury, Antimony, etc.	**Metallurgy, 4.** Zinc, mercury, Antimony, etc. **Geology, 4.** Special problems.
Elective, 4.	**Elective, 4.**	**Elective, 4.**	**Elective, 4.**	**Elective, 4.**	**Elective, 4.**	**Elective, 4.**
Thesis, 5.	**Thesis, 5.**	**Thesis, 5.**	**Thesis, 5.**	**Thesis.**	**Thesis, 5.**	**Thesis.**

NOTES ON THE FOREGOING COURSES.

The studies of freshman year are the same in all the courses.

Aside from their technical work all regular students in this college take one year in each of the following subjects, save one term of German or French which is given to military drill: German, French, Chemistry and Physics. There is an elective study offered in all courses through the senior year.

Candidates for a degree in any one of the courses can, by a judicious use of electives, so arrange their work as to be able to graduate from any other course by additional residence at the University of one year or more as the requirements of the course selected may demand.

Students in the college of Science, Literature and the Arts, who contemplate taking a degree in this college after completing their course, are recommended to select their electives with reference to as full a preparation as possible for the technical work of the course they propose to enter.

Students from other institutions applying for admission to advanced standing must have completed in a satisfactory manner the work pursued by the class which they intend to enter, or present an acceptable equivalent therefor.

The elective of any term may be chosen from the work of either junior or senior year and from any department of this College or of the college of Science, Literature and the Arts, provided it can be pursued with profit to the student. The list of these electives in the last named College will be found on pp. 74-84 of this catalogue.

In the cities of the Northwest, notably Minneapolis, Saint Paul, Duluth and West Superior, are many manufacturing establishments, electric light and power stations, metallurgical works, ore docks and railway shops; in Minnesota and the neighboring states, easily accessible from the University, are situated some of the most interesting mining districts of North America. Visits and excursions are planned at convenient times for investigating the practical application, in a large way and under business methods, of the principles studied in the class room.

Technical essays form an important part of the professional work in every course of study. So far as it can be done the collection of material for these essays is urged upon the students in vacation time as a recreation from the steady discipline of the classroom. In several of the courses, viz: Civil Engineering, Mechanical Engineering and Architecture the preparation of the essays themselves can be carried on to good advantage during vacation. The time for handing in the essays, while naturally depending somewhat on the nature of the work, must in all cases be arranged with the department.

THE MODERN LANGUAGES.

The work in the modern languages will be directed to those practical ends which are so essential to a well rounded technical education. One year's work in German and two-thirds of a year in French are required; the grammar and extracts from standard authors, some of them distinguished scientific men, receive such attention that the student may prepare himself for mastering technical literature.

MATHEMATICS.

The course in pure mathematics covers five terms in freshman and sophomore years. One term each in the following subjects: Higher Algebra, Trigonometry, Analytical Geometry, Differential Calculus and Integral Calculus. With a thorough preparation in mathematics on admission to the college, it is believed the student can in that time develop the habit of exact, sustained and independent reasoning to a very satisfactory degree. He will also be prepared to meet those special needs that the higher technical and scientific work of the junior, senior and graduate years of his studies will bring.

CHEMISTRY.

A year of work in Chemistry is required in all the courses, in which the student will get a good practical knowledge of the metallic elements, a familiarity with the principal ores of the metals, and an understanding of the chemical principles involved in their extraction. The preparation, properties and uses of the salts of the metals will be considered. Associated with this work and following it is a thorough course in qualitative analysis, required of all students in Mining, Metallurgy and Chemistry.

PHYSICS.

The required year of Physics is intended to be elementary and general, giving the student such a knowledge of phenomena and principles as will fit him for any subsequent work in the science. The regular work of the class room is supplemented by experimental lectures, not only to illustrate the laws of phenomena, but also to give the student ideas of methods and manipulation. With this general knowledge the student enters the laboratory and devotes himself to the more exact and exhaustive study of those particular lines which pertain to the special degree for which he is a candidate. The first year is therefore preparatory and the same for all students, while the subsequent years are adapted to the requirements of individual cases. Independent work in the laboratory is the special feature of this department after the first year.

DEPARTMENTS.

EQUIPMENT AND COURSES OF INSTRUCTION.

CIVIL ENGINEERING.

INSTRUCTION.

During the earlier part of the course instruction is given with the aid of text books, together with field practice in the adjustment of the different instruments, their use in actual surveys for distances, positions and areas, accompanied in all cases by full notes of the work done, which in the draughting room are reduced and platted.

As the work advances, the text book is supplemented with lectures and collateral reading among engineering journals and periodicals, societies' transactions and government reports, with which the engineering library is liberally supplied. With studies not accompanied by field or laboratory work, practical problems are required illustrating the theoretical principles, ensuring a better understanding of these principles and leading the student to the final aim of all theoretical discussions, viz,: an ability to reach results in actual cases.

In the earlier part of the course, while the student is studying the instruments and methods of work, and acquiring the simple handicraft and technical knowledge necessary for his further professional training, he is closely guarded and directed; later, self-reliance in work is fostered by encouraging new lines of experimentation and research, and by allowing some freedom as to choice of different lines. Mental discipline is kept strongly in view; care in observations, field operations and records are insisted upon throughout.

In the junior year an extended course in Analytical Mechanics and Graphics is pursued preparatory to the higher professional studies of the department. Complete designs of structures are made with the necessary specifications together with estimates of actual cost of construction and erection.

Studies are made of existing structures and tours of inspection are required to various examples of structural work of which many are to be found in Minneapolis and vicinity.

Studies are also made of the causes which produce failure in structural work.

EQUIPMENT.

There is a very complete equipment of the best field and office instruments, including transits, levels, plane-tables, solar compasses, level and telemeter rods, tapes, chains, protractors, planimeters and calculating machines, a complete equipment for geodetic work, consisting of clock, chronograph, chronometer, astronomical transit, secondary base-line apparatus, repeating theodolites, heliotropes, magnetometers, etc. A current meter for hydrographic work has also been added to the list of apparatus. There are models, drawings and blue prints of arches, trusses and details of construction in iron, wood and stone.

LECTURES.

A course of lectures has been established in this department for the purpose of bringing to the knowledge of students, in the most vivid manner, recent developments in professional practice. Prominent engineers of Minneapolis and Saint Paul will give lectures in this course. J. T. Fanning, Hydraulic Engineer; F. W. Cappelen, City Engineer, Minneapolis; W. de la Barre, Chief Engineer St. Anthony Water Power Company; C. F. Loweth, Sanitary Engineer; A. W. Munster, Bridge Engineer, and George L. Wilson, First Assistant City Engineer, Saint Paul, have consented to contribute each along the line of his specialty.

MECHANICAL ENGINEERING.

The work of this course may be divided into three principal lines; theoretical engineering, experimental engineering and manual training, or the mechanic arts.

THEORETICAL ENGINEERING.

The course in theoretical engineering consists of the study of pure mathematics followed by the applied principles in the mechanics of engineering; pure mechanism or kinematics which traces the motion of connected parts without reference to the causes of motion, work done or energy transmitted; and machine design, in which the strength of parts and the proportioning of machinery is studied and actual designs and problems worked out.

The subject of pure mechanism is supplemented in the drawing room where the successive positions of moving parts and the graphical solution of problems may be laid down on paper. In the last year of the course the study of thermodynamics is given by lectures, recitations and problems on the nature of heat and the measurement of its effect on fluids; generation of steam and the graphics of heat engines are considered, and the principles

of mechanics and thermo-dynamics as applied to the design and construction of steam engines, turbines and other motors are investigated.

Opportunity for the student to specialize is given by offering an elective study throughout the senior year.

EXPERIMENTAL ENGINEERING.

The work in experimental engineering begins with the investigation of the materials used in engineering. Their physical qualities are tested, the theory of strength of materials is applied, and the results compared with the results of the tests.

The instruments of precision used in mechanical tests are calibrated; practice is given on the preparation of tables, curves of efficiency, and the correction and determination of constants; the power given out by motors and the efficiency of mechanism and of boilers are measured; the methods of scientific and commercial tests are investigated.

A course in experimental physics also extends through the junior year.

MECHANIC ARTS.

In the drawing rooms the student receives practice in free-hand drawing, shading, lettering and sketching parts of machines; also correct methods for producing mechanical drawings.

The shop work in this department aims to acquaint the student with the methods of modern manufacturing establishments, and enable him, as far as possible, to acquire skill in the processes.

The wood-working and pattern-making course is intended to embody the application of tools and practical methods to the work, and the proper construction of patterns for parts of machines. This is supplemented by instruction in the moulding and founding of these parts in brass and iron.

In the forge shop the student is instructed in welding, forming various shapes in iron, and in the making and tempering of hand and machine tools. The instruction in the machine shop is intended to give the student familiarity with the tools and operations of the modern machine shop, by the construction of parts or the whole of a machine and the making of machine tools.

THE MECHANICAL LABORATORY

Is supplied with power, and contains a variety of apparatus for experimental purposes, among which are the following: A 50,000-pound Olson testing machine, which can be adapted for compressive, tensile, transverse, torsion and shearing tests. Other pieces of apparatus, designed by the department, are used in connec-

tion with the testing machine in making tests of full sized beams, up to 25 feet in length. An extensometer, for use in connection with tensile tests, is capable of accurately measuring extension to one ten-thousandth of an inch. There is a Riehle cement tester for ascertaining the tensile strength of cements; a dynamometer for measuring transmitted power; an oil testing machine; standard scales; a pair of very accurate and highly finished test gauges registering pressure up to 300 pounds; a test pump for pressure gauges; a pump for testing boilers; a mercury column for calibrating steam gauges and indicators; and other apparatus for making mechancial tests; a dynamometer for determining the power of lathe tools, and a ten-horse power experimental steam engine and a steam pump for use in hydraulic investigations. A friction brake; a throttling, super-heating and separating tank; calorimeters; pyrometers; revolution counters; tanks; steam engine indicators; gauges; thermometers; a water motor and a Worthington water meter; a Wheeler condenser with air pump, and other instruments required for complete steam engine and boiler tests or for use in experimental work.

The department has a very fine skeleton pressure gauge, and a number of sectional working models, presented by the manufacturers, among which may be mentioned, a Dawes steam pump, marine steam pop-valve, Westinghouse engine air brake valve, triple valve and a Van Deutzen jet-pump.

THE SHOPS.

The basement of the Engineering building is occupied by the mechanical laboratory, machine and vise shop, and wood working shop; the wing by the engine and boiler room, forge shop and foundry.

The shops are equipped with tools which represent the best American practice. Each shop will accommodate from ten to twenty students at a time.

The instruction given is based on the "Russian system," in which the leading idea is to teach principles rather than to produce objects of commercial value. It is believed that the greatest progress can be made in a given time by this method, as the student proceeds, by a carefully planned series of exercises, from the simplest to the most difficult operations, learning the process but avoiding the repetition of the ordinary shop. So far as is consistent with this system the work is adapted to parts of some machine or structure in common use, and after finishing the exercises referred to above, the class will build some complete machine or structure, as a review and application of the preceding work.

Shop work is required of students in mechanical and electrical engineering, and carpentry is required of students in all the courses in the college.

The engine and boiler room is provided with an automatic cut-off engine of modern type, capable of developing thirty-five horse power. A steel boiler of ample size, furnished with a feed pump injector, and all necessary fittings for conducting efficiency tests, supplies steam for the engines and laboratories.

The machine and vise shop contains speed lathes, engine lathes of various sizes, planer, shaper, universal milling machine, vertical drill press, emery tool grinder, a Brown & Sharp cutter and reamer, grinder, grinding attachment to lathe, ten benches with vises, surface plates, a set of Bett's standard gauges, taps, dies, reamers, arbors, drills, chucks and other hand tools and accessories for practice in machine, tool and vise work. The small tools are kept in a tool room and issued on the "check" system.

The shop for pattern making and general wood work contains benches with vises and tools, lathes and lathe tools, an improved universal sawing machine for pattern making, etc., a jig saw, planer, boring machine, grindstone and other tools for use in the courses in carpentry and pattern making.

The forge shop is provided with a portable hand forge, stationary forges with anvils and sets of tools, a blower, and exhaust fan, hand drill press, drills, taps, dies, sledges, swages and other tools generally used in blacksmithing.

The foundry contains an eighteen inch cupola, brass furnace, core oven, moulding tools, benches, ladles, crucibles and all of the tools and material ordinarily needed in moulding and casting iron, brass or white metal.

Regular students pay a fee of three dollars and special students a fee of five dollars for each term of shop work.

DRAWING ROOMS.

The general drawing room is furnished with drawing tables for the use of classes in elementary drawing. A considerable collection of prints, drawings and models, including a full set of Schrœder's models for descriptive geometry is at hand for reference. Two additional drawing rooms contain tables, cases, etc., for students in advanced work in all the courses of study comprised in this College.

Adjoining the drawing rooms are printing and dark rooms fitted with complete apparatus for duplicating drawings by the "blue print" process and for photography.

Another dark room exclusively for photographic work has been fitted up on the first floor.

Rooms in Pillsbury Hall are equipped with a constantly increasing collection of papier mache models, casts, drawings and charts for use in the instruction in freehand drawing.

SPECIAL APPARATUS.

Besides a number of pieces of apparatus described in connection with the drawing rooms, mechanical laboratory, etc., there is a set of standard weights and measures furnished by the U. S. Coast and Geodetic survey. The set embraces: 1. A yard scale divided to inches and tenths, with a matrix for end measurement. 2. Weights from one grain to twenty-five pounds. 3. Liquid measures—a pint, a quart and a gallon. 4. Dry measures —a quart, a half peck, a peck and a half bushel. A table of correction for errors due to temperature, etc., accompanies the set.

LIBRARY AND READING ROOM.

The library and reading room of this department is in common with those of the departments of Civil Engineering and Architecture, and contains 700 volumes and pamphlets. There are on file 35 technical periodicals. Constant additions are made as works of value are published, A large number of trade catalogues are received and kept on file for reference.

ELECTRICAL ENGINEERING.

The department of Electrical Engineering is associated with the department of Physics, and has free use of all its apparatus and facilities for work.

EQUIPMENT.

This includes three rooms with eight solid masonry pillars for the support of sensitive instruments; dynamo room with engine, dynamos, motors, etc; battery room; four laboratory rooms for general work; photometer room; photographic room; library and reading room; Professor's private study and laboratory; also a floor space of 190 by 70 feet for arc light photometry.

All rooms in this department are wired for electric light, time, experimental current and call bells. In the attic are a meteorological room and a photograph room, provided with exposed window, skylight, etc.

The department of physics possesses a large and valuable collection of instruments for lecture purposes and practical laboratory work. Besides a great variety of instruments for general physical measurements the department possesses a large projecting lantern with Ward focussing arc lamp, one Bunsen photometer, Holtz, Toepler-Holtz and frictional electric machines, storage batteries, Thomson's quadrant electrometer, spark micrometer, electric condensers, a var-

iety of direct reading and reflecting galvanometers, two magnetometers, two induction coils, large and small, a collection of magnets of various forms, Verdi's chronograph, a complete set of meteorological instruments as furnished by the U. S. weather service, and the requisite glassware and mirror instruments to render the above a very complete physical equipment.

In addition, the department of electrical engineering possesses a number of dynamos, including a 150-light Edison, 300-light Slattery alternator, 15-ampere Slattery exciter, 9-light Thomson-Houston arc machine, full complement of instruments for each of the dynamos, 0.5-KW and 0.6-KW Edison motors, C. & C. constant current motor, 7 arc lamps of different types, 10 transformers, 12 adjustable rheostats for heavy currents, 3 lamp boards for 10, 20 and 60 lamps in various combinations, 33 300-ampere-hour secondary cells, 150 secondary cells for potential, 50 primary cells of various types, a cradle dynamometer, Weston double-scale (0-150 and 0-750) D. C. voltmeter, Weston double-scale (5-75 and 10-150) A. C. and D. C. voltmeter, Weston (0-150 and 0-15) ammeters, 12 other ammeters and voltmeters, 33 galvanometers of various kinds (including 3 torsion, with shunt and series coils for potential and current, 3 D'Arsonval, 3 ballistic, 2 electro-dynamometers, and 2 Thomson reflecting), 8 S. & H. resistance boxes, 3 standard ohms, 2 box bridges, 6 divided wire bridges, Queen portable testing set, Kruss incandescent lamp photometer, arc light photometer, 12 telescopes and scales, magnetometer, a number of silver and copper voltameters, sets of telegraph and telephone instruments, a large variety of switches and other electrical supplies. There are also available a 2 h. p. "D. & D." motor in the mining department and other machines and apparatus which are loaned or sent in for testing.

READING ROOM AND LIBRARY.

The reading room of the Electrical Engineering department now receives regularly the leading periodicals devoted to electrical engineering obtained by purchase and exchange or loaned by the professor in charge. The library is being increased by the addition of the best and latest electrical books and by trade catalogues. There is also a growing collection of samples furnished by various manufacturers and dealers, a great help in exhibiting best modern practice and in teaching young engineers to appreciate the merits of different products. Free access is given to the private library and collection of the professor in charge.

INSTRUCTION.

Since electrical engineering is so closely allied with mechanical engineering the two courses are nearly parallel, the electrical

students taking less shop work and draughting and more laboratory practice in the junior and senior years. The course aims to give the students a knowledge of fundamental phenomena, principles and the various applications of electricity, the methods and instruments used in measuring and transforming it and practice in the design and construction of electrical apparatus. Practice and theory are taken simultaneously. During the junior and senior years students have daily work with electrical instruments and apparatus of commercial size and with commercial problems. A journal club meets weekly for the discussion of current literature in mechanical and electrical engineering, keeping in touch with current progress and best modern practice, and teaching the students the value of the technical press. The extensive and varied electrical interests in Minneapolis and Saint Paul furnish excellent and ample illustration.

It is the aim to train the students to be independent and efficient workers, and they are encouraged to adopt the methods of professional engineers. In the lectures and laboratory work frequent reference is made to original memoirs and various articles in the technical journals and books. Students are encouraged to verify the formulas used in various calculations and to derive their own formulas for simplifying work in special cases. At the same time they are taught the use of logarithms, slide rule, tables, curves, charts and all legitimate means for obtaining accurate results with least amount of drudgery.

LECTURES.

In a science developing as rapidly as this, text-books are necessarily incomplete. The classroom instruction is, therefore, given largely by lectures illustrated by experiments and lantern slides and supplemented by problems. Reference is continually made to the works of Stewart and Gee, Slingo and Brooker, Thompson, Kapp, Fleming, Ewing, Maxwell and others; the Transactions of the American Institute of Electrical Engineers and various other periodicals and books. The lecture courses are:

I. First term, Junior, for students in M. E., E. E., Arch., Chem., Min. and Met.—Methods of electrical measurement; use and abuse of instruments; elementary theory of dynamos and motors; installation and operation of electrical machinery and apparatus. Preparation required:—Physics of the sophomore year.

II. Second term, Junior, for M. E. and E. E.—Theory of electromagnet; dynamo and motor; methods of regulation; design and construction. Preparation required:—Course I, and the differential and integral calculus.

III. First term, Senior, E. E.—Phenomena, measurement and use of alternating currents. Preparation required:—Courses I and II.

IV. Second term, senior, for M. E. and E. E.—The electric light; comparison of different artificial lights; photometric and electrical tests of arc and incandescent lamps; carbons; manufacture of incandescent lamps; erection and maintenance of lines. Preparation required:—Course I.

V. Third term, senior, for E. E.—Transmission of power; applications to railway, mining, and other special lines; electric welding and electro-metallurgical processes. Preparation required:—Courses I, II and III.

DESIGN.

The electrical engineers have drawing and design in common with the mechanical engineers in the first three years. A large number of numerical problems are given during the junior year. In the senior year they work out, on the drawing-board, designs of electro magnets and mechanisms and dynamos, lines, switches, switch-boards and plants. Complete working drawings and specifications of some special problem are worked out and each student is expected to help construct in the shops some piece of electrical apparatus previously designed by himself or others.

LABORATORY WORK.

The work in the Physical and Electrical laboratories is designed to train the student in methods of precision and investigation, and daily oversight of the students insures their working at best efficiency. They are encouraged to determine for themselves the best methods as independent workers. The laboratory course is not divided into subjects for the various terms, but students are treated individually and advanced as rapidly as their attainments warrant.

The laboratory course provides for instruction in the adjustment and use of instruments of precision for measurements of time, length, mass, heat and light; measurements of electrical resistance, potential and current, by various methods; measurements of capacity, insulation, magnetic fields; calibration of ammeters and voltometers; photometric tests of arc and incandescent lamps; characteristic curves and efficiency tests of dynamos and motors; experiments with alternating currents and measurement by instantaneous contact and other methods; special problems in transmission; theoretical and experimental study of machines; tests of plants in the vicinity.

In fitting up the laboratory care is taken to secure representative types of apparatus. The dynamos, belts, friction-clutches, lamps, switches, wiring, etc., are carefully chosen and are of commercial style and size, in order to acquaint the student with actual practice.

During the past year the students have designed and constructed a series motor, an arc light photometer, several rheostats, lamp boards, magnetometers, an instantaneous contact maker, multiple-point D. P. switch, and an A. C. ammeter. They have also installed dynamos and motors; erected heavy lines; examined at least sixteen isolated plants in Minneapolis and vicinity; directed or assisted in several efficiency tests of light and power plants and electric railway motors. The graduating thesis in this department is expected to include some original investigation, generally of an experimental nature. Research work is also carried on by advanced students and by the instructors. At the present time such work is being pursued along the following lines:

The variation of distribution and intensity of arc lights as affected by the use of different globes.

The "bucking" of motors.

Efficiency test of an incandescent electric lighting and steam heating plant.

The compound winding of a constant potential dynamo.

The use of windmills with electric generators.

A method of regulating dynamos operated at variable speed.

The effects of electricity on the growth of wheat.

ARCHITECTURE.

The object of the course in Architecture is to prepare the student not so much for the practice of draughtsmanship as for designing. His qualifications for becoming an expert in the former will be acquired in the office after completing his course in the school, although, his renderings of the consequent problems of the course will greatly facilitate his becoming of value as a draughtsman.

INSTRUCTION.

The course in mathematics, pure and applied, extends through the entire four years and serves as the necessary basis for professional service. The mathematical theory is constantly verified by thorough tests of the actual strength of material, both of masonry, wood and iron.

The more strictly professional work begins in the second year with the study of the elements of architecture, including the five orders and using Vignola as a text book with illustrated blackboard lectures and the study of plates designed and worked out by the more advanced students.

Carpentry instruction is given by a skilled mechanic in the wood-working shop.

Shade, shadows and perspective are taught by lectures and plates with continual practice in problems of design and in the making of measured drawings from existing work.

Electricity in its application to lighting and to the mechanical contrivances of modern buildings will be illustrated by laboratory work and experiments.

Planning and study of the arrangement of rooms, together with general details; transverse sections; also heating and ventilation will be taught by blackboard lectures and by frequent visits to buildings in process of construction or already built.

Historic Ornament will be studied in the use of Ward's Principles of Ornament as a text book and illustrated by problems and designs. Plumbing and house draining, by Paul Gerhard, will be the text book used upon that subject.

Building superintendence, by T. M. Clark, will be the text book used in the study of construction; this will also include specifications and contracts.

Practice in design is carried through the last three years. At first, design of detail by dictation, then composite design, adhering strictly to the orders and finally by a freer use of the later styles of architecture according as the student has become familiar with the same in his study of architcctural history.

Special students in Architecture will be admitted to the various classes upon giving satisfactory evidence of their qualifications therefor and by proper matriculation.

CHEMISTRY.

The object of this course is to provide for a greater amount of time devoted to the practical and industrial applications of the science than is afforded in an ordinary undergraduate course, and to join with the increased amount of practical chemistry a considerable proportion of studies in the engineering branches. By a coursc of this kind a young man is enabled to fit himself for work leading up to the business not merely of an analyst, but ultimatcly of a manager or manufacturer.

INSTRUCTION.

The work of the freshman year has already been stated and the equipment of the department for undergraduate and graduate study, as well as for the working out of original problems, has alrcady been described. See pages 45 to 46. Beginning with the third term of sophomore year, quantitative work is taken up. During two terms the students in applied chemistry work with those in mining and metallurgy in the gravimetric determination of certain metals and acids in purified salts, following this by analyses of coins and other alloys and minerals; then

the preparation of standard solutions for volumetric determination; the use of the same in testing the strength of acids and alkalies, and the analyses, with the use of both gravimetric and volumetric methods, of iron ores, copper ores, limestones, siliceous materials, slags, etc., are entered upon.

Subsequently two terms of lectures in Industrial Chemistry are introduced, illustrated with experiments and specimens showing the nature of various technological processes and products. A detailed study will be made of numerous chemical manufactures, for example, those connected with the alkali industry, the preparation and use of mordants, soap-making, sugar-making, the production of fertilizers, paints, disinfectants, etc. Accompanying and following lecture-room work of this kind much time will be given to laboratory exercises, including the preparation of salts and other compounds, and the analysis of many technical materials and products of inorganic and organic composition. Work will be done in both ultimate and proximate organic analysis, and in gas analysis. In the latter part of the course the student is encouraged to engage in original investigation, as for such work the science of Chemistry offers a very promising field. The thesis required as the closing work of the course is expected to represent considerable original work.

SCHOOL OF MINING AND METALLURGY.

The advantages offered by this school to students pursuing the courses in mining and metallurgy are such that each subject can be presented in a most thorough and practical manner. The work naturally falls under the following subdivisions: assaying; ore testing and lectures on mining and metallurgy. This course is supplemented by thorough courses in physics, chemistry, mineralogy, and geology.

The outfit of these departments and their various laboratories is such that each subject can be presented in most exhaustive detail.

ASSAYING.

The course in assaying consists of lectures and practical work. Great importance is attached to the work in the laboratory. A large, well-ventilated furnace room, in which are located muffle and crucible furnaces, and another room of similar dimensions equipped with desks, pulp and button balances, afford accommodations to a large number of students. Ores of various metals of known value are given the students, who are required to make up the necessary charges and submit their report in detail. The ores are representative ones and such as would be met with and handled by any assayer in the field. Various methods are tried and comparisons made.

ORE TESTING.

Already detailed specifications have been prepared for an extensive ore testing works. The site selected is on the banks of the Mississippi, between the Great Northern and Northern Pacific railroads. As the funds appropriated to the erection of such a work were sufficient to purchase only the necessary machinery, an appeal was made to the business men of Minneapolis to enlist their interest in providing a suitable building. A most general and hearty response was met and through their generosity over five thousand dollars have been subscribed. The building is to be of stone and will harmonize with the surrounding buildings on the campus. The works will contain all the machinery necessary to illustrate the various processes of testing ores. The student will be given a sufficiently large amount of ore to make the tests upon the different machines and will report the best method of treatment. In this way he will become acquainted by personal experience with the machinery used in our leading ore dressing establishments of the west. Ground will be broken this summer for the new building.

LECTURES AND PRACTICE.

The lectures in mining and metallurgy will be illustrated with various pieces of mining machinery, metallurgical products, drawings, blue prints, photographs and diagrams. Many of these articles have been generously donated to the departments by interested friends. The mines and metallurgical establishments which lie on all sides of Minneapolis are easily accessible, and offer special facilities for most profitable practical illustrative work.

LIBRARY.

The departments have already a complete set of the Transactions of the American Institute of Mining Engineers, the Engineering and Mining Journal, and other similar books of reference. The students have also access to a very complete private library, as well as to the Minneapolis Public Library, which contains an exceptionally large and valuable set of publications on subjects relating to mining and metallurgy. The leading periodicals will also be accessible to all. Constant references in lectures will compel the student to keep himself well informed as to the latest methods, machinery and changes in practice going on in his special line of work.

THE SCHOOL OF DESIGN.

ADMISSION.

The School of Design offers a three years course in practical ornamental design and elementary art to students of mature years who can pass an examination in elementary drawing, which will cover substantially the work of one year.

COURSE OF STUDY.

FIRST YEAR.

FIRST TERM.

Study of Light and Shade from the cast.
Perspective Drawing.
Landscape Drawing, outdoor work and lectures.
French 4.

SECOND TERM.

Drawing in crayon and charcoal from casts of historic ornament.
Sepia painting from geometric casts.
French 4.

THIRD TERM.

Study from the Antique, crayon and charcoal.
Historic ornament in Sepia.
French 4.

SECOND YEAR.

FIRST TERM.

The Anatomy of Pattern.
Geometric Design.
Analysis of Plant Forms.

SECOND TERM.

The Anatomy of Pattern.
Cast drawing in Sepia.
Original Composition.

THIRD TERM.

The Planning of Ornament.
Study of Historic Ornament.
Plant Forms from Nature in Color.

THIRD YEAR.

FIRST TERM.

Original color designs for walls and ceilings.
Sepia and water color work from nature.
Archaeology of Greek Art.

SECOND TERM.

Designing for prints, book covers, stained glass and relief work.
Advanced study of Historic Ornament.

THIRD TERM.

Original composition in Design adapted to the various periods of historic ornament in "flat" and relief work.

NOTES ON THE COURSE.

This course is as thorough and comprehensive as possible within the limits of time specified and is carefully outlined with a view to the gradual and progressive development of artistic training, and the systematic and uniform cultivation of the eye, the hand and the mind to work together for the best results.

EQUIPMENT.

The School of Design is equipped with a full set of skeleton models for the study of perspective, charts of the orders of architecture, and geometric solids for the study of proportion and chiaroscuro. It also has a fine line of casts of historic ornament and architectural details and full length figures and busts of classic and historic sculpture. There is also a small library of standard works of art.

DESIGN.

The actual work in design is not entered upon until the beginning of the second year. It being considered essential that a thorough knowledge of drawing in all its varied aspects and mediums should form the foundation of all decorative and industrial art.

Although one year of drawing is necessary for entrance to the first year's work of this course, a student may enter at once into the second year's work—where the actual study of Design begins—by giving satisfactory evidence of having completed all the work required up to that point; and a student may continue to do special work in drawing only, if desired, and students doing advanced work in drawing will be allowed considerable freedom in the choice of subjects and materials, while those with definite aims will receive special and individual training in advanced work.

The study of Design is commenced by illustrated lectures on the "Anatomy of Pattern" and the "Planning of Ornament;" these are followed by actual practical work in the orginal composition of geometric designs founded upon the proper combination of horizontal, vertical and oblique lines and the circle; and upon their relation to the harmony of contrast in repetition, proportion and symmetry, in both form and color.

Natural plant forms are then analyzed and conventionalized, and adapted to varied geometric spaces in repeated units and "all over" treatment in both flat tints and shaded relief.

APPLIED DESIGN.

When the student has become thoroughly conversant with the laws of natural growth and the underlying principles of design, and when these elements can be rendered with grace and feeling, the study of the application of orament to different purposes and places is entered upon in relation to printed goods, woven fabrics, sculptured ornament and constructed furniture.

HISTORIC ORNAMENT.

The study of historic ornament in relation to the various periods of art; is here taken up, original decorative designs based upon these periods are executed; and original essays, written and illustrated by the students, are required. Lectures are given on historic ornament and the decorative arts of all the leading periods of art, from the ancient Egyptian to the latest phases of the Renaissance, including the history of art as related to applied art. The advanced study of the human figure and the lower animal forms is taken up in connection with this work and illustrated lectures are given on the anatomy of expression.

An application of the fundamental principles of design to ornament in general rather than to special work of a professional nature is all that can be given in the course outlined, but practical working designs for carpets, wall paper, wood and stone carvings, blankets, prints, stained glass, book covers, etc., are completed during this course.

GRADUATE STUDIES AND DEGREES.

For the University year 1893-94, graduate courses will be offered in Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining, Chemistry and Metallurgy. These courses are a continuation of the lines of undergraduate work laid out in the foregoing courses of study, and in that department which has conferred upon the student a baccalaureate degree. Upon the completion of a full year of work and by passing a satisfactory examination, with a technical thesis, the student is entitled to a second degree. The degree conferred is that of Engineer in the course pursued, or that of Master of Science.

For the rules and regulations concerning graduate work, particularly as to the amount of work done, the method of selecting work, the degree of proficiency expected and the time and manner of conducting the examinations, consult the chapter on the Graduate Department; pp. 57 to 61 in this catalogue.

The importance of this gradute work to professional engineers cannot be over-estimated, and all the departments of the college are directing special attention to it. During the coming year the following major subjects will be offered to graduates in the several departments:

COURSE OF INSTRUCTION.

CIVIL ENGINEERING—Advanced work in geodesy and practical Astronomy.

MECHANICAL ENGINEERING—Machine design; experimental investigations.

ELECTRICAL ENGINEERING—Advanced laboratory work; original investigations; design and testing of light and power plants.

MINING AND METALLURGY—The Mesabi iron ores and their treatment; other special subjects on approval.

CHEMISTRY—Special problems involving original research in chemistry and meeting the approval of the officers of the department.

PHYSICS—(*a*) Any line of undergraduate work which has not been taken by the student as an undergraduate. (*b*) Special problems in electricity and heat; (*c*) investigations in mechanics and optics for those qualified.

GEOLOGY AND MINERALOGY—(*a*) Studies on the crystalline rocks of Minnesota and neighboring states; (*b*) Paleontological researches in the areas of Cambrain and Lower Silurian rocks in the northwest.

SCHOOL OF DESIGN—(*a*) The history of decorative art; (*b*) Original composition in ornamental design.

It is intended to give to advanced students in art who desire to pursue their studies in the history of art and into the field of original design, a good opportunity to secure the criticism and assistance in their studies which this school affords.

A number of Fellowships are being raised in this college, one of which will be offered for the coming year. Graduates of universities where technical courses of recognized standing are offered, are eligible as candidates. Those who desire can learn particulars by corresponding with Professor Hoag or Professor Shepardson.

THE SOCIETY OF ENGINEERS,

is a flourishing organization, holding meetings every Saturday at 1 p. m. for discussion of topics of current interest, hearing reports and lectures from members of the faculty and others. Arrangements have been made for the publication of a Yearbook of the society, which shall statedly present the progress of the engineering departments and the original work done during each year.

LIBRARIES AND READING ROOMS.

The reference libraries within reach of the students of this college are rapidly becoming valuable. The files of the serial publications in the different fields of engineering, architecture, mining, metallurgy and chemistry are nearly all complete, notably the following:

Proceedings of the American Society of Mechanical Engineers; Proceedings of the American Society of Civil Engineers; Transactions of the American Institute of Electrical Engineers; Transactions of the American Institute of Mining Engineers; Engineering and Mining Journal; The Chemical News; Journal of Analytical and Applied Chemistry; American Chemical Journal; Reports of the Chief of Engineers, U. S. Army; reports of the Weather Bureau, U. S. Signal Service; Journal of the Franklin Institute; Reports of the U. S. Coast and Geodetic Survey; School of Mines Quarterly; The Engineering Magazine; The Colliery Engineer, and Mineral Resources of the United States.

The standard works bearing on special subjects are secured as they appear.

Connected with the several departments are reading rooms in which are the leading periodicals relating to the particular lines of work. The whole number of files in the college accessible to all students cannot be less than one hundred. This number includes many donated by the societies publishing them and others loaned by members of the faculty, who at all times place both their periodical lists and their entire professional libraries at the disposition of the students.

TECHNICAL ESSAYS AND THESES.

Technical Essays. Four technical essays are required of each student, one each term beginning with the first term of junior year. The first and second may be translations of professional articles from the French and German engineering and technical periodicals. In the preparation of these translations the subject must be approved by the professor in charge, and the language must be accurate and idiomatic English. The third and fourth essays shall embody the results of the personal investigations of the writer, for instance: critical discussions of the views of the authors of technical papers or new technical books; the scientific description of some new machinery or manufacturing plant; a professional report upon some railroad survey, industrial works, mine or metallurgical plant.

Theses. Each member of the senior class in this college in addition to the final examination must prepare a thesis on some subject particularly relating to his course. This paper must con-

tain some original research made by the student himself; it must bear merits as a technical paper and must be creditable as a specimen of literary work.

The thesis shall be written or printed and a copy deposited in the library of the University. The subject of the thesis must be announced to the head of the department in which the student is a candidate for a degree and the work of preparation be formally begun at the beginning of the second term of Senior year.

The subject of the thesis and the character of the work done upon it will be suggested in large measure by the course of study pursued by the candidate. Great emphasis is laid upon the careful and accurate preparation of the thesis, because, more than any other work the undergraduate does, this certifies to his ability to undertake the difficult and responsible duties involved in the direction of engineering and industrial interests.

The thesis must be completed and put in the hands of the Faculty as early as the senior examination week of the third term.

THE GILLETTE-HERZOG PRIZES.

THE GILLETTE-HERZOG MANUFACTURING COMPANY offer for competition, by the students of the college of Engineering, Metallurgy and the Mechanic Arts, two annual prizes, viz:

A FIRST CASH PRIZE OF FIFTY DOLLARS accompanied by a GOLD MEDAL.

A SECOND CASH PRIZE OF THIRTY DOLLARS accompanied by a GOLD MEDAL, under the following conditions:

1. The subjects admitted:

   I. MECHANICAL ENGINEERING is such branches as engine and machine construction and design; heating systems as applied to large manufacturing plants; general construction and arrangement of ideal manufacturing plants to show most economical construction of buildings, most advantageous arrangement of machinery and most expeditious handling of work.

   II. ARCHITECTURAL AND STRUCTURAL ENGINEERING as seen in the construction of fire proof buildings, and iron and steel structures generally. The efficiency of cast iron, wrought iron and steel columns should be compared. This subject should also include the construction of iron and steel roofs and trusses, girders, etc.

   III. CIVIL ENGINEERING as in bridge construction; e. g. the design of a swing bridge with a discussion of the whole question of strains.

   IV. ELECTRICAL ENGINEERING particularly in the electric lighting of manufacturing plants and the use of electric motors in such plants.

2. While the competition is open primarily to seniors in Mechanical, Architectural, Civil and Electrical Engineering, special circumstances may make it advisable to admit graduate students in these departments to the competition.

3. The names of ten (10) students selecting suitable subjects shall be presented in good faith as signifying their intention to compete for the prizes before the Gillette-Herzog Manufacturing Company shall be bound to declare the prizes open for competition.

Further, the Gillette-Herzog manufacturing company and the President of the University shall name the board to adjudge prizes; prizes may be withheld if the theses and designs are of insufficient merit; the judges shall keep the practical usefulness of the theses in mind; honorable mention may be made of any thesis; each thesis accompanied by its designs shall be handed in without the name of the writer or any designating mark, and all theses shall be presented in duplicate, one copy becoming the property of the University and the other of the Gillette-Herzog Manufacturing Company.

The prizes awarded under the first annual offer in 1892 were as follows:

FIRST PRIZE to Leo Goodkind, for a design of a fire-proof building with steel skeleton frame.

SECOND PRIZE to James A. Gill, for a design of a high speed Corliss engine.

THE COLLEGE OF

AGRICULTURE

THE SCHOOL OF

AGRICULTURE AND THE

EXPERIMENT STATION

The College of Agriculture.

THE FACULTY.

CYRUS NORTHROP, LL. D., *President.*
SAMUEL B. GREEN, B. S., *Professor of Horticulture.*
OTTO LUGGER, PH. D., *Professor of Entomology and Botany.*
HARRY SNYDER, B. S., *Professor of Agricultural Chemistry.*
CHRISTOPHER GRAHAM, B. S., V. M. D., *Professor of Veterinary Medicine and Surgery.*
CLINTON D. SMITH, M. S., *Professor of Agriculture.*
HENRY W. BREWSTER, PH. D., *Assistant Professor of Mathematics.*
T. L. HAECKER, *Instructor in Dairying.*

The instruction not given by the Faculty of the college of Agriculture is given by the Faculty of the college of Science, Literature and the Arts.

THE COLLEGE OF AGRICULTURE

is designed to give to young men, who may desire it, the advantages of a thorough, liberal and practical education, not only to prepare them for the successful prosecution of agriculture in all its branches, but to secure to the student the mental discipline and training necessary to qualify him for any other calling or profession, and fit him to discharge intelligently the duties of an American citizen. The period of study requisite for graduation extends through four years.

REQUIREMENTS FOR ADMISSION.

Candidates for admission to the freshman class are required to show attainment equal to that represented by the certificate of graduation from the School of Agriculture, and graduates of the School of Agriculture are admitted on certificate.

SCOPE OF INSTRUCTION.

The object of this college is to teach practical and scientific agriculture, combined with such other branches of learning as are necessary for mental discipline and training, and such as constitute a liberal education, and embrace the following studies and exercises.

FRESHMAN YEAR.

FIRST TERM.	SECOND TERM.	THIRD TERM.
Drawing, 2.	Drawing, 3.	*Chemistry or Physics "A," 4.
English, 5.	Mathematics, 5.	*Botany or Zoölogy, 4.
Solid Geometry, 5, or Higher Algebra, 5.	German "B," 5.	*Chemistry or Physics "B," 4.
German "B," 5.	English, 5.	German "B," 4.
Drill, 3.	Rhetorical work, 1.	Drill, 3.
Rhetorical work, 1.		Rhetorical work, 1.

SOPHOMORE YEAR.

FIRST TERM.	SECOND TERM.	THIRD TERM.
Botany or Zoölogy "A," 4.	*Botany or Zoölogy "A," 4.	Chemistry or Physics "A," 4.
*Chemistry or Physics "A," 4.	Chemistry or Physics "A," 4.	*Botany or Zoölogy "A," 4.
German, or French "B," or History, 4.	*Botany or Zoölogy "B," 4.	*Botany or Zoölogy "B," 4.
*Chemistry or Physics "B," 4.	German or French, "B," or English Literature, 4.	German or French "B" or History, 4.
Rhetorical work, 1.		Rhetorical work, 1.

*In electing between chemistry and physics or between botany and zoölogy the student is required to take the long course in one and the short course in the other.

JUNIOR YEAR.

FIRST TERM.	SECOND TERM.	THIRD TERM.
Veterinary Science, 4.	Veterinary Science, 4.	Horticulture, 4.
Agricultural Chemistry, 4.	Agricultural Chemistry, 4.	Animal Industry, 4.
	Feeding, 4.	
ELECTIVES:	**ELECTIVES:**	**ELECTIVES:**
Any two of the following:	Any one of the following:	Any two of the following:
Botany,	Mineralogy,	Astronomy,
Psychology,	History,	German,
History,	English,	Drawing,
Political Science,	Scandinavian,	Agricultural Chemistry
Mineralogy,	French,	English,
Scandinavian,	Mathematics,	Botany,

JUNIOR YEAR.—Continued.

FIRST TERM.	SECOND TERM.	THIRD TERM.
Electives.—Continued.	**Electives.—Continued.**	**Electives.—Continued.**
Mathematics,	Psychology,	Mineralogy,
English,	Political Scienc ,	Political Science,
Physics,	German,	Veterinary Science,
Rhetoric,	Physics,	Animal Biology,
Entomology,	Animal Biology,	Physics,
German,	Botany,	Latin,
Animal Biology,	Rhetoric.	Surveying.
Latin.		

SENIOR YEAR.

FIRST TERM.	SECOND TERM.	THIRD TERM.
Geology, 4.	Field Agriculture, 4.	
Field Agriculture, 4.		
Horticulturc, 4.		
ELECTIVES:	ELECTIVES:	ELECTIVES:
Any one of the following:	Any three of the following:	Any four of the following:
Agricultural Chemistry,	Veterinary Science,	Political Science,
Botany,	AgriculturalChemistry,	Astronomy,
Veterinary Science,	Animal Biology,	Ethics,
English,	Botany,	Botany,
Entomology,	Geology,	Pedagogy,
Physics,	Political Science,	Applied Geology,
Political Science,	Latin,	Animal Biology,
History,	Ethics,	Latin,
History of Philosophy,	Mathematics,	Social Philosophy,
English Literature,	English,	English,
Animal Biology.	Military Science,	Mathematics,
	French,	History,
	Pedagogy,	Philosophy of Religion,
	German,	Scandinavian,
	Scandinavian,	French,
	Physics,	German,
	History.	Social Philosophy.

GRADUATION.

Upon the completion of this course the degree of Bachelor of Agriculture is conferred.

FACILITIES FOR INSTRUCTION.

Students in the College of Agriculture receive the benefit of the library and apparatus of the University, as well as those belonging to the college. The whole may be enumerated as follows:

The general library of the University, containing more than 30,000 volumes, and receiving frequent additions. Many volumes are especially devoted, in a practical manner, to the subjects of agriculture, horticulture, tree culture, stock-raising and veterinary science. Besides these, there are several hundred volumes on zoölogy, physiology and other sciences related to agriculture.

The general museum of the University, the museum of technology, the museum of agriculture, containing at present a collection of models of machines and implements, a collection of the seeds of vegetables, grain and garden seeds in glass jars, a collection of grains and grasses in the straw, and cabinets of insects of Minnesota, form a part of the equipment for instruction in agriculture.

The Agricultural Experiment Station furnishes young men an opportunity to take part in lines of experimental work pertaining to general farming, the management of stock and the dairy, and the various branches of practical horticulture.

A Veterinary Hospital gives the student a chance to observe the practical treatment of sick domestic animals. Special effort is being made to make this more valuable than ever before.

THE UNIVERSITY FARM.

The Experiment Farm, consisting of two hundred and fifty acres of most valuable land, is located between St. Paul and Minneapolis, adjoining the State Fair grounds. It contains every variety of soil and exposure required for illustrative and experimental work, and is furnished with a full equipment of buildings, stock, implements and machinery.

The farm is stocked with fine specimens of the best breeds of domestic animals, designed to illustrate their characteristics and value for various purposes and for experiments in feeding, breeding and management.

OBJECTS OF THE FARM.

The farm is designed to accomplish the following purposes:

(1). To furnish to students practical illustration in the field, stable, orchard, garden, dairy and vineyard, of the instruction given in the class-room and laboratory.

(2). To train young men in all the details of practical agriculture.

(3). To aid students in defraying, by their labor, a portion of their expenses while acquiring their education.

(4). To carry on the work of an agricultural experiment station, asssisting, by scientific investigation and experiment, in determining the adaptation of new varieties of grain, grasses, fruits and vegetables to the soil, climate and wants of Minnesota, and to distribute the results of such investigation among the farmers of the State.

THE SCHOOL OF AGRICULTURE.

FACULTY.

W. W. PENDERGAST, Principal, *Civics, Physical Geography.*
H. W. BREWSTER, PH. D., Assistant Principal, *Mathematics.*
SAMUEL B. GREEN, B. S., *Horticulture and Applied Botany.*
OTTO LUGGER, PH. D., *Zoology and Entomology.*
C. R. ALDRICH, *Shopwork, Drawing.*
FLORENCE A. BREWSTER, *Librarian,*
WILLIAM ROBERTSON, B. S., *Physics, Language.*
J. A. VYE, *Penmanship, Accounts.*
CLINTON D. SMITH, M. S., *Agriculture, Dairying.*
HARRY SNYDER, B. S., *Chemistry.*
T. L. HAECKER, *Breeding and Dairying.*
CHRISTOPHER GRAHAM, B. S., V. M. D., *Physiology, Veterinary Science.*

OPENING.

The coming year will open October 10, 1893, and close March 30, 1894.

ADMISSION.

Admission is given to students who have completed a common school course in English Grammar, Arithmetic, U. S. History and Geography, as prescribed by the state department of public instruction.

Students will be received without examination in subjects for which they can furnish the certificates of high schools or of county superintendents.

Students deficient in grammar and penmanship, who understand arithmetic through fractions, will be admitted to a preparatory class in those branches.

When applying for admission or information, address W. W. Pendergast, Principal, St. Anthony Park, Minn.

EXPENSES.

The cost to the students for board and washing is no more than the actual cost of maintaining the table and caring for the house. This does not exceed $3 per week. A month's board is assessed in advance for the purchase of provisions at cash prices. At the end of the month the exact cost is calculated and the proper deduction made from the next assessment.

Two beautiful and commodious buildings have been erected for the comfort of students. The culinary department is managed by an experienced matron, and the entire house is under the supervision of the principal. The buildings are warmed by steam and the sleeping rooms are each furnished with a bedstead, mattress, dressing bureau and table. Students furnish their own bedding, pillows and towels.

Trains on the Great Northern railroad stop at St. Anthony Park, one mile distant. Baggage is transferred free.

BEDDING AND TOWELS.

Each student furnishes four sheets, one pair of blankets, one quilt, one pillow, three pillow cases, two towels, and comb and brush.

TEXT BOOKS.

Text books are furnished at an annual rental of $3 to students who do not desire to purchase.

TOOLS.

Each student is expected to furnish his own drawing tools at a cost not to exceed $5.

MILITARY DRILL UNIFORM.

It is recommended that all students taking the drill provide themselves with the uniform, which consists of blouse, trousers, vest and cap, modeled after the U. S. Military Academy uniform, of cadet gray, and is as neat and economical a dress as the student can obtain.

The leading furnishers of Minneapolis and St. Paul furnish the suit complete, to measure, for about $22. The vest may be omitted for which allow $3.

A much cheaper suit than the above can be obtained but is not recommended.

CHEMICAL FEES.

Students in the chemistry classes are charged a small fee, not to exceed seventy-five cents per term for chemicals used in class work.

DEPOSIT.

In addition to the assessment of $12 for board, a deposit of $5 is required of each student as a guaranty for the return of all books, tools and other articles borrowed.

THE TOTAL EXPENSES FOR THE YEAR need not exceed $85 to each student.

LABOR.

The school is conducted upon the principle that charácter makes all labor honorable. As much, therefore, of the labor at the home and on the farm as can be distributed among the students is given to them at a fair rate of compensation.

COURSE OF STUDY.

FIRST YEAR.

FIRST TERM.	SECOND TERM.
Arithmetic [5]	Agriculture [3]
Botany [5]	Botany [5]
Manual Training and Farm Buildings [7½].	Farm Accounts [5]
Physiology [5]	Manual Training and Blacksmithing [7½]
Military Drill [2]	Physiology [2]
	Military Drill [2]

SECOND YEAR.

FIRST TERM.	SECOND TERM.
Breeding and Dairying [7½]	Veterinary Science [3½]
Dairy Chemistry [2]	Agricultural Chemistry [5]
Fruit Culture [3]	Breeding and Dairying [4]
Veterinary Science [5]	Entomology and Vegetable Gardening [5]
Physical Geography and Zoölogy [5]	
OR	Field Crops [5]
Algebra [5]	OR
Military Drill [2]	Algebra [5]
	Military Drill [2]

THIRD YEAR.

FIRST TERM.	SECOND TERM.
Agricultural Chemistry [7½]	Feeding [4]
Forestry [3]	Greenhouses and Hot-beds [3]
Physics applied to Agriculture [5]	Physics applied to Agriculture [5]
Plane Geometry [5]	Soils and Fertilizers [5]
Lectures on Farm Law.	Civics [4]
Military Drill (Optional) [2]	OR
	Geometry [4]
	Military Drill (Optional) [2]

[Figures in brackets indicate the number of hours per week in which the subject is pursued.]

AN ADDITIONAL YEAR.

An additional elective course of one year's work is offered to graduates and to others of equal attainments, such work to be chosen from the following subjects:

Agricultural Chemistry, Breeding and Dairying, Civil Government, Designs and Structures, English Composition; Entomology, Feeding, German and Mathematics

SPECIAL STUDENTS.

Students not able to complete the entire course, may, with the approval of the faculty, elect a special course in studies particularly devoted to agriculture.

CONNECTION WITH THE AGRICULTURAL COLLEGE.

The school articulates with the college of Agriculture, in which the subjects are largely elective to meet the demands for special education.

EQUIPMENT.

The school possesses well equipped laboratories for instruction in Chemistry and Physics, plant houses for Botany and Horticulture, and a library. Provisions are made for a museum. Students have access to the special facilities of the Experiment Station. The agricultural and horticultural work on the University farm is conducted partially with reference to instruction in the school.

PHYSICS.

The work in Physics is as largely experimental as may be, constant use being made of the laboratory and its equipment to illustrate and enforce the teachings.

Matter, force, energy, motion, friction, work, heat, light, electricity and other subjects are considered in their application to soils, plants, cultivation, pumps, windmills, artesian wells, springs, siphons, fountains, water powers, pulleys, levers, centrifugals, steam engines and all farm machinery; to dwelling houses, school houses, also heating, lighting and ventilating the same; to thermometers, barometers, hot-beds, ice-houses, lightning rods and country roads.

CIVICS.

During the last term of the course, students receive instruction in this science and graduate with a good understanding of the origin, necessity, nature and various forms of government, and the machinery employed to carry on public works, establish

justice and provide for the common defense; of the organization and management of local institutions, the town, the village, the city and the county; the manner in which states are created and their affairs administered, the three departments, legislative, judicial and executive, and the functions of each; the interdependence of the state and its citizens, as well as the powers and obligations of each, by due attention to which the state may be strengthened and the condition of its citizens ameliorated.

The relations of the states to the general government; the constitution and the powers it confers, and the provisions for amendment are taught.

The more important principles of commercial law, including contracts, agency, partnership, corporations and commercial paper receive attention.

Instruction is also given in the U. S. method of surveying public lands.

PHYSICAL GEOGRAPHY.

In the pursuit of this branch the student becomes acquainted with the relation of our earth to the solar system and learns some of the more important of the general laws of nature and their operation upon the air, the water, and the land; upon plants, the lower animals, and upon man himself. He grasps the causes of the familiar natural phenomena which he observes around him, including movements and moisture of the air; springs, wells, streams and their work; structure and sculpture of the land; weather and climate, the production of soils; the various forms of life, its distribution and modification; the laws which govern it; the dependence of plants and animals upon their surroundings and upon each other, the influence they exert upon the development of the human race and the factors necessarily employed in bringing about desired changes.

The work done in this line is especially calculated to quicken and stir the mind up to close observation and earnest, independent investigation, which will constantly add new and valuable material to the stock already gained.

ARITHMETIC.

Students entering are required to understand arithmetic through fractions, both common and decimal. The course gives special attention to denominate numbers, in its various forms, interest discount, etc., evolution and mensuration. The aim is to secure both accuracy and facility in the most practical operations.

ALGEBRA.

No algebra is required. Students intending to enter the college of Agriculture after graduating from the School of Agriculture, should complete elementary algebra through quadratics.

GEOMETRY.

The first three books of Wentworth are required. Students intending to enter the college of Agriculture should finish geometry. Special attention is given to principles of symmetry, clearness of statement, and accuracy of logical inference.

SHOPWORK AND DRAWING.

Instruction is given by means of text-books, lectures, and work in the shop and drawing room, in the care and use of tools, including setting and filing saws, filing bits, grinding plane-irons, chisels, and other tools; also in laying out work and framing buildings.

Methods of construction are illustrated by models and drawings.

Various articles for use about the farm are manufactured by the students.

Designs are made for dwellings, barns, out-buildings and machinery.

Estimates are made of the amount of material and the cost of construction.

VETERINARY SCIENCE.

The instruction in veterinary science embraces a two-years' course. In the first year instruction is given in anatomy and and physiology. The lectures are illustrated by means of charts, skeletons, manikins and, whenever practicable, by living animals.

In the second year the principles of pathology and therapeutics are taught, for which purpose sick animals are kept and treated in the veterinary hospital, giving the student a chance to examine and care for them and diagnose common diseases, under the direction of the instructor.

ZOOLOGY.

Chiefly Minnesota animals are considered; (1) their classification; (2) their habits and food; (3) their relation to the farmer.

ENTOMOLOGY.

The class in entomology receives instruction of a practical nature. The course is divided as follows:

1. CLASSIFICATION OF INSECTS, sufficient to enable the student to distinguish between useful and injurious insects and to apply remedies intelligently, as the remedies must be selected according to the kind of insects combatted.

2. INSECTICIDES AND THEIR APPLICATION. The most improved methods of using arsenical poisons, kerosene emulsions, pyrethrum, and other preparations are taught.

3. NATURAL REMEDIES, and nature's methods of preventing increase of any injurious insects receive due attention so as to enable the student to apply their teachings.

4. The relation of other animals to insects is also taught, so that the student may know both his friends and his foes.

5. Special attention is given to injurious and useful insects of Minnesota.

PENMANSHIP AND ACCOUNTS.

In this department the student is taught to write a plain hand with rapidity and ease.

The work in accounts is applied to the transactions which the student meets with in the various duties on the farm. He is so taught to keep his accounts that he may know at any time the profit or loss of any department of his business, and is thus enabled to act intelligently.

Attention is given to the different kinds of negotiable paper; the various forms of endorsements and their effect; business forms and correspondence. Everything is made so plain and practical that students can learn to keep accurately and neatly the accounts of any ordinary business.

HORTICULTURE AND FORESTRY.

Instruction is given in growing the hardy fruits and vegetables for market and home use; raising garden seeds; managing hot-beds, greenhouses and window gardens; propagating and improving plants by selection, crossing and hybridization.

Under the general subject of forestry, are considered the effect of forests on climate; the comparative value of hardy deciduous and evergreen trees and shrubs; the value and best methods of forming shelter belts and forest plantations; landscape gardening; the cutting, seasoning and preservation of wood; the characteristics of hardiness and the propagation of hardy ligneous plants.

BOTANY.

This study is taught with special reference to its bearing upon the every day problems that present themselves to the farmer and gardener. It is profusely illustrated with flowers and plants from the greenhouse and nursery. Some instruction is given in the use of the compound microscopes, and the students are thus enabled to study intelligently, in an elementary way, the tissues of plants, By this means they get a clear idea of the general principles of plant structure and vegetable physiology.

AGRICULTURE.

The instruction in Agriculture continues through the course and is distributed as follows:

FIRST YEAR—The selection, laying out and general manage-

ment of farms; soils and soil formation; drainage; the general principles of cultivation; farm machinery and in connection with shop work and drawing, planning and construction of farm buildings.

SECOND YEAR—Dairy husbandry; milk testing and dairy chemistry; setting milk and hand separators; care of cream; churning, washing, salting, working, and packing butter.

ANIMAL INDUSTRY—Principles of breeding; the characteristics of the various breeds of our domestic animals with practice in judging and scoring them.

FIELD AGRICULTURE—Care of meadows; study and classification of the grasses, clovers and forage plants; cultivation of cereals and farm crops generally; grading wheat and stacking grain; weeds and the best methods of exterminating them.

THIRD YEAR—An extended study of the various kinds of soils, their geographical distribution, chemical composition and special treatment demanded by each, with a study of fertilizers; principles of feeding domestic animals; food stuffs; calculation of rations; and the application of the general principles established.

The school is equipped with the necessary machinery, tools and other appliances to give the instruction in all lines a distinctively practical trend. The Dairy Hall is supplied with milk testers, Cooley creamers, hand separators, churns and butter-workers, conveniently arranged.

In the University barn are silos and root cellars, for illustrating methods of construction and filling, a full line of agricultural implements, a herd of cattle, including thoroughbred Jerseys, Guernseys, Holsteins, Shorthorns and Polled Angus, of the highest type; a prize flock of Southdown sheep, and specimens of many breeds of swine. In addition to a constant, careful study of these animals, the observation of the student is extended by frequent visits to the herds and flocks of breeders of stock situated in or near the Twin Cities.

AGRICULTURAL CHEMISTRY.

Instruction is given in the general principles of the science and is illustrated by the many chemical changes that take place on the farm. The work gradually branches, as soon as the preparation will allow, to the topics that are of material importance to the farmer, such as the composition of plants and food stuffs, and the study of the chemical changes that take place in plants from their germination to their final preparation as food products. The composition of milk and the chemical changes involved in its manufacture into butter, cheese and other products are studied. Practice is given in the analysis of milk and the

detection of adulteration. Under the head of Soils and Fertilizers, the demands of the various crops upon the soil are considered. The entire work of this course is supplemented by constant practice in the laboratory.

GRADUATION.

Students are entitled to the certificate of the University upon the following conditions:

First—The completion of the prescribed course with an honorable standing in deportment, and thoroughness and intelligence in subjects studied.

Second—A practical experience in field work, either at the University or elsewhere as shall appear in reports received from responsible sources.

This certificate admits students to any one of the special lines of study provided in the college of Agriculture.

STUDENTS' DEBATING SOCIETY.

A society for the purpose of improvement in elocution and debate, and for obtaining instruction, in the form of lectures, gives excellent opportunities for entertainment and culture. The following lectures were given under the auspices of this society the past year:

Nov. 10, John F. Downey and Eugene D. Holmes, "A Bicycle Tour in Europe;" Nov. 10, Conway MacMillan, "The Golden-Rod;" Nov. 22, Henry T. Ardley, "Original Design;" Dec. 1, O. C. Gregg, "How to Control Men;" Dec. 18, C. R. Aldrich, "Planning Farm Buildings;" Dec. 22, James P. Pinkham, "The Voice of Dead Nations;" Jan. 7, Otto Lugger, "Marine Animals;" Jan. 10, J. T. McCleary, "Recreations with the Dictionary;" Jan. 19, W. W. Pendergast, "Indian Massacre;" Jan. 26, H. M. Bracken, "A Visit to the West Indies;" Feb. 10, C. W. Hall, "A Trip to New Orleans;" Feb. 23, J. M. Dowling, "Education;" Mar. 2, C. W. G. Hyde, "Walter Scott and His Works;" Mar. 10, H. W. Brewster, "Cremation."

THE DAIRY SCHOOL.

The third session will open on the 3d of January, 1894, and, continuing four weeks, will close January 31.

The number of students admitted is limited by the Board of Regents to the first fifty applicants. Application for admission should be addressed to Clinton D. Smith, St. Anthony Park, Minn.

This course is designed to furnish the persons who are actually engaged in the manufacture of butter and cheese in the factories of the state, opportunity to study the chemical principles underlying their business and at the same time to become expert in the best method of manufacture. Recognizing the fact that such persons can not be away from their business for a long period and have not the funds to pay for board and room longer than is actually necessary, the course has been so arranged that the time of each student is fully occupied by lectures and actual work at the vat, separator, churn or butter worker every hour for six days in the week.

Every student is engaged in the afternoon in practical work in the cheese and the butter rooms, while the forenoons are occupied by lectures, milk testing, judging butter, and studying boilers and engines.

The instruction in the course will be given as follows:

DAIRY CHEMISTRY.

A lecture will be given by Prof. Harry Snyder at eight o'clock in the morning of each day in the lecture room of the Dairy Hall. These lectures will give a comprehensive study of the composition of milk, the chemical changes that take place in the souring of milk, ripening of cream, and the various processes of manufacture. The use of the lactometer, lactoscope and the Babcock and Biemling milk tests is fully explained. Practice in the use of these instruments is continued until each student becomes expert in detecting the adulteration of milk and in milk testing. The system of paying for milk according to its actual content of butter fat is fully explained.

BUTTER MAKING.

The work in this department may be classified as follows:

(*a*) Cleanliness. By inspection and constant attention to de-

tails, habits of personal cleanliness are formed. The practice of neat and clean methods of handling milk and doing dairy work is insisted upon.

(*b*) Instruction is given in judging milk, in regard to cleanliness and purity, as it is delivered at the factory.

(*c*) Sampling and testing milk.

(*d*) Setting up, speeding, oiling and managing separators, measuring capacity of separator, regulating proportion of cream, testing skim milk, detecting and preventing wastes.

(*e*) Care of cream, proper temperature and conditions for ripening to secure exhaustive churning.

(*f*) Churning, proper temperature and condition of cream when ready to churn, condition of granules when churning should be stopped, methods of washing butter, proper temperature of butter, proper temperature of water.

(*g*) Working butter, securing sufficient working without injuring the grain, quantity of salt and its incorporation into the butter.

(*h*) Packing and subsequent handling.

(*i*) Judging and scoring butter.

CHEESE MAKING.

Instruction is given in the manufacture of Cheddar and other popular kinds of cheese according to the most approved methods. Each student analyzes the milk as it comes to the factory and performs the whole process of manufacture daily, receiving constant instruction in all the details and in the use of new appliances and tests for detecting and preventing wastes.

MANAGEMENT OF ENGINES AND BOILERS.

A ten o'clock a. m. instruction is given in the cutting and fitting of pipes, the construction, firing and economical management of steam boilers, the adjustment, speeding and running of engines, speeding and placing of shafting, pulleys and such other mechanical appliances as are needed in creameries and factories.

FACTORY BOOK-KEEPING.

Instruction is given in keeping a systematic record of the accounts of a creamery or cheese factory, including the method of paying for milk according to its fat content.

EXPENSES.

A registration fee of $10 is required of each student who is not enrolled in the regular school course.

Board can be obtained at reasonable rates in either of the two cities or at St. Anthony Park. The Interurban electric railway affords constant communication with either city. Assistance is given in finding a boarding place.

BUILDINGS.

The home is a three-story building, the main floor of which contains a parlor, an office, the library and a large recitation room, part of the recitation room being used as a reading room. The lower floor contains a dining room, kitchen, wash-room, and necessary appurtenances. The upper floor is used for dormitory purposes.

Pendergast Hall is a large five-story brick building heated by steam. The basement contains a bath room, lavatory and heating plant. On the ground floor are the assembly room and two recitation rooms. The three upper stories are occupied by students.

The Dairy Hall erected in 1891 is unsurpassed in convenience of arrangement and completeness of equipment by any building in the United States erected for a similar purpose. The butter room is large, well lighted and supplied with all the necessary apparatus for butter making. All the better kinds of steam separators which have a capacity of 1,200 pounds per hour or more and leave less than 3 per cent. fat in the skim milk, and the different styles of churns and butterworkers are in constant use. The cheese room is lighted by windows on three sides, and is provided with ten cheese vats, with the necessary accompanying utensils. Hot and cold water and steam are supplied to each of the cheese vats and at several convenient points in the butter room.

Chemistry Hall contains the chemical laboratory on the first floor, while the second floor is occupied by lecture and laboratory rooms specially adapted to the instruction and practice of agricultural chemistry.

The Farm House is a large four-story frame building heated by steam and containing thirty rooms, some of which are now occupied by such students as cannot be accomodated in Pendergast Hall.

The Green House is used for propagating plants to be used in botany and horticulture, and for experiment work in these lines.

The Veterinary Hospital furnishes quarters for sick animals and rooms for clinics, and for lectures to the students of the School of Agriculture.

THE

DEPARTMENT OF LAW

The Department of Law.

HON. WILLIAM S. PATTEE, LL. D., *Dean of the Department and Professor of the Law of Contracts.*
FRANK B. KELLOGG, *Lecturer on Equity Jurisprudence and Procedure.*
CHARLES L. WILLARD, LL. B., *Lecturer on the Law of Bailments.*
JUDGE JAMES O. PIERCE. *Lecturer on Constitutional Jurisprudence and History.*
HON. C. D. O'BRIEN, *Lecturer on Criminal Law and Procedure.*
CHARLES W. BUNN. LL. B., *Lecturer on Suretyship and Mortgages and Practice in the United States Courts.*
HON. GEORGE B. YOUNG, A. M., LL. B., *Lecturer on the Conflict of Laws.*
SELDEN BACON, LL. B., *Lecturer on Civil Procedure, including Evidence.*
CHAS. B. ELLIOTT, Ph. D., *Lecturer on Corporations and Insurance.*
HON. JOHN DAY SMITH, *Lecturer on American Constitutional Law.*
HON. H. F. STEVENS, *Lecturer on the Law of Real Property.*
T. DWIGHT MERWIN, A. B., *Lecturer on Patent Law.*
JAMES PAIGE, LL. B., *Lecturer on Domestic Relations, and Quiz Master.*
EDWIN A. JAGGARD, *Lecturer on Taxation and Torts.*

LEGAL EDUCATION.

"There is little, if any, dispute now as to the relative merit of education by means of law schools, and that to be gotten by mere practical training or apprenticeship as an attorney's clerk. Without disparagement of mere practical advantage, the verdict of the best informed is now in favor of the schools.

"The benefits which they offer are easily suggested, and are of the most superior kind. They afford the students an acquaintance with general principles, difficult, if not impossible, to be otherwise obtained; they serve to remove difficulties which are inherent in scientific and technical phraseology, and they, as a necessary consequence, furnish the student with the means for clear conception and accurate and precise expression. They familiarize him with leading cases, and the application of them to discussion. They give him the valuable habit of attention, teach him familiar maxims and offer him the priceless opportunities which result from contact and generous emulation. They lead him readily to survey the law as a science, and imbue him with the principles of ethics, as its true foundation. Disputing, reasoning, reading and discoursing become his constant exercises; he improves remarkably as he becomes acquainted with them, and obtains progress otherwise beyond his reach.—*Report of the Committee on Legal Education, to the American Bar Association, August 21, 1879, at Saratoga, N. Y.*

ORIGIN.

Provision was made in the charter of the University for the establishment, at the proper time, of a Department of Law; and in the early part of 1888, the Regents, believing the proper time had come, established the department, elected a Dean, and provided a full corps of lecturers. The department opened on September 11, 1888, and its membership during the school year reached the number of sixty-seven. The lectures and instruction, during the first year of the department's existence, were given in rooms provided in the main building, which proved altogether inadequate to accomodate the numbers in attendance.

THE LAW BUILDING.

The rapid growth of the department made it necessary to provide larger accommodations, and in the spring of 1889, plans were prepared for a new building especially for the Law Department.

During the following summer the building was erected, finished and furnished, so that the department took possession of the same in October of that year.

The Law Building is a beautiful structure, and furnishes the school with first-class accomodations in every particular.

It was designed for the sole use of the Law Department, completed and furnished with reference to the needs of such an institution. It is constructed of red brick and brown sandstone, and located in a grove of native trees a short distance from the main University building.

Upon the first floor is a large lecture room, constructed on the plan of an amphitheatre, copiously lighted, thoroughly ventilated and furnished with comfortable chairs, arranged with special reference to taking notes with ease and convenience.

Upon the same floor there is the society room, devoted to the literary association of the department, and also a recitation room for text-book work.

Upon the second floor there is a large and thoroughly ventilated library room, a court room, a lecture room and the offices of the Dean.

The building is thoroughly heated by steam generated by a plant located some distance therefrom, supplied with gas, water and all the modern conveniences necessary to make the building complete and thoroughly equipped.

REQUIREMENTS FOR ADMISSION.

Any person of good moral character will be allowed to matriculate in this department. If, however, the person applying for admission intends to be a candidate for a degree at the end of his course, he must be not less than eighteen years of age.

Graduates of universities or colleges, and students who have graduated from any normal school or state high school of Minnesota, or from similar institution of equal grade in other states, are admitted without examination upon presentation of their diplomas.

All other applicants, if candidates for a degree, will be examined in English composition, including English grammar and orthography, English and American history, also Geography, Arithmetic and Physiology. But if the applicant should be found deficient in any of the foregoing subjects he may enter conditionally and make up the deficiency elsewhere during the junior year.

SPECIAL STUDENTS.

Persons who are not candidates for a degree may enter the college at any time as special students without examination and may pursue whatever subjects they desire, provided they possess such knowledge and ability as will, in the opinion of the faculty, enable them to pursue the subject of law with profit to themselves. And all such students will be entitled to a certificate upon a satisfactory examination in the subject pursued by them, stating the time they have been members of the school and the subjects in which they have passed a creditable examination.

ADVANCED STANDING.

Should any person desire to enter the senior class for a degree, he must be at least nineteen years of age, must have had the required preliminary examination upon the subjects of the junior year, or their equivalent, but no person will be allowed to receive his degree who has not spent one full year in this department. Attorneys of law, however, who have been admitted to practice in the State of Minnesota, may enter the senior class without examination upon presentation of their certificates of admission and shall be entitled to their degree upon a satisfactory showing at the final examination of the year.

Applicants who have diplomas, entitling them to admission without examination, should present them to the Registrar of the University, who, upon the payment to him of the matriculation fee and the first term's tuition, will register them as students of the Law Department.

Those who are to take examinations or enter as special students, should present themselves to the Dean of the Department of Law, who will, upon proof of their qualification for admission, refer them to the Registrar, where they can pay the matriculation fee and the first term's tuition and receive their cards of admission.

TUITION.

Matriculation fee,	$10.00
Tuition per term, payable each term in advance,	15.00
Diploma fee,	10.00

COURSES OF STUDY.

TWO YEARS' COURSE.

The undergraduate course, extending over a period of two years, of nine months each, comprises among other subjects, the following:

FIRST YEAR (JUNIOR.)

Contracts.
Torts.
Criminal Law and Procedure.
Real Property.
Equity Jurisprudence and Procedure.
Domestic Relations.
Suretyship and Mortgages.
Partnership.
Common Law and Code Pleading.
Evidence.

SECOND YEAR (SENIOR.)

Contracts.
Corporations.
Fire and Life Insurance.
Wills and Administration.
Law of Taxation.
International Law.
Constitutional Law.
Conflict of Laws.
Admiralty Law.
Medical Jurisprudence.
Jurisdiction and Practice of United States Courts.

The course on contracts extends through both the junior and senior years, and embraces, among other topics, bills, notes and commercial law generally; contract liabilities of infants, incapables, and married women; agency; bailments; bankruptcy and insolvency. These specific topics will be considered during the two years, at such times and in connection with the treatment of such general subjects, as shall be most advantageous and convenient for students and instructors.

THREE YEARS' COURSE.

To accommodate those who cannot attend the lectures during the day, there is offered an evening course comprising the same

subjects as those above enumerated, extending over a period of three years, of nine months each. The students in this course go over the same subjects as those in the day department, taking a year longer in which to do the work; but if those attending in the evening find time to do the requisite amount of reading and study to enable them to pass the final examination at the end of two years, they will be allowed to graduate at the expiration of that time.

GRADUATE COURSE.

For the benefit of those students who wish to pursue their legal studies further than they are able to do in the undergraduate years, a graduate course of one year is offered.

This course has been in operation two years, with good success. There were four graduated from this course in 1892, receiving the degree of Master of Laws, and there are five who will receive the same degree at the coming commencement.

It is the intention to make this course hereafter a more important and attractive feature of the Department of Law.

To this end more extensive and thorough courses of lectures by able jurists have been arranged, upon various subjects, among which are the following:

International Law.
Constitutional Jurisprudence and History.
Minnesota Law and Practice.
Taxation.
General Jurisprudence.

The object of this course is to afford an opportunity to gain a broader view of jurisprudence and also a greater familiarity with the particular practice of Minnesota.

Those who enter this course as candidates for the degree must have already received the degree of Bachelor of Laws, from this or some other law school.

Those who spend the entire year in the work prescribed for this course, and pass a satisfactory examination upon the subjects taken, will be entitled to the degree of Master of Laws.

Any person who possesses the requisite legal learning may, however, enter this course as a special student and pursue any or all of the studies offered.

Tuition in this course is $10 per term or $30 per year and diploma fee of $10.

LIBRARIES.

The department has a good library containing those English and American reports most frequently cited; digests; dictionaries and a full and excellent selection of standard text books. To this collection additions are being constantly made.

Further facilities are afforded the department by the generous action of the Bar Association of Minneapolis in granting to the students the free use of its extensive and ample library located in Temple Court. It contains all the American reports, State and National, and also the English text books and reports so necessary for the student in his study of fundamental principles of jurisprudence.

Beside the University and Bar Association libraries, the State Library, containing everything which a student would have occasion to consult, is located at the Capitol, in St. Paul, and is thus within easy reach of the students.

The general library of the University contains about thirty thousand bound volumes, beside many thousand volumes of pamphlets magazines, reports, etc. About one hundred and twenty periodicals are received regularly by the library, not inclusive of technical magazines and newspapers in English and other languages.

The library is open to students and the public from 8 a. m. to 9 p. m. every day of the University year, except Sundays and legal holidays. Books may be borrowed for home reading, to be kept seventeen days. Reference works and other rare and costly volumes are not allowed to be taken from the library, but may be consulted in the reading room.

Beside the general library of the University, there are several special libraries, consisting mainly of books of reference and current periodicals relating to technical subjects, in connection with the several departments of engineering, animal biology and botany.

These libraries are open during the entire day, and the University library is open also in the evening.

METHOD OF INSTRUCITON.

The sessions for the day students begin at 2 o'clock p. m. and those for the evening students at 7:15 o'clock p. m. and continue from one and a half to two hours.

The method of instruction is not confined to either lectures or recitations, but such a combination of both is adopted as is best calculated to interest the student and secure for him a thorough, accurate and comprchensive knowledge of the principles and rules of law. And in addition thereto such a use of the reports is made as will familiarize the student with the leading cases upon the various subjects in which he receives instruction.

COURTS.

The department is located within easy reach of both the Federal and State courts. The United States courts are in session

in St. Paul and Minneapolis during the greater part of the school year. The Supreme court of Minnesota, the District courts of Ramsey and Hennepin counties, and the Municipal courts of St. Paul and Minneapolis are open and in session almost constantly and afford all the opportunity for witnessing the trial of actual cases which the student will have either time or desire to improve.

MOOT COURT.

A moot court is organized at the beginning of each year and continued during the three terms. As fast as the student becomes acquainted with the primary rights of persons, cases are prepared for his consideration, whereby he may apply the principles of law with which he has become familiar.

There is also established a system of moot courts corresponding to the Justice, the District and the Supreme courts of Minnesota, wherein the student may become familiar with the practice and the rules of the courts respectively.

It is the aim of the department to acquaint the student with the practice as well as the theory of the law, and to this end the subjects of pleading, evidence, rules of practice adopted by our State courts, methods of securing provisional remedies, appeals from one court to another, the writs of habeas corpus, certiorari and others of frequent use, conveyancing, drawing contracts and other like practices which comprise the daily work of the general practitioner, will, during the senior year, receive special and careful attention.

Some member of the faculty will preside over each of these courts, associating with him such members of the class as he shall from time to time select. Briefs will be prepared and other steps taken so far as possible, which practice requires in the actual conduct of cases.

THE LECTURERS.

All the lecturers in the department are lawyers actively engaged in the practice of their profession. They come to the class room direct from the bar, bringing with them fresh experiences and the spirit of actual contest. They all possess a high ideal of what a lawyer should be and do, and the student who enters here is expected to come with the fixed purpose of attaining a high degree of excellence in his legal aquirements, and to respond in earnestness and fidelity to the faithful efforts of his instructors in his behalf.

THE LITERARY SOCIETY.

The students of the department, juniors and seniors, have joined in organizing a literary society for the purpose of general

improvement and for cultivation in the practice of extemporaneous speaking. They hold weekly meetings and derive great benefit from their exercises.

ELECTIVES FROM OTHER DEPARTMENTS.

Students of this department will be admitted under proper regulations, to exercises in the other departments or colleges of the University, without extra charge, and so far as does not interfere with their law studies, they are urged to avail themselves of this opportunity to attend lectures and recitations in the other departments. Such elections should be made only after consultation with the Dean. The following subjects are suggested as being particularly suitable: International Law, Constitutional History and Political Science.

DEGREES.

The degree of Bachelor of Laws will be conferred upon all students who pursue the full course in this department, and pass an approved examination. The degree will also be conferred upon those, who, having attended another law school for a period of one year, shall also attend for one year in this department and pass a like examination.

ADMISSION TO THE BAR.

The Legislature of Minnesota in the year 1891, recognized the Law Department of the University of Minnesota in the following enactment, whereby students graduating therefrom are entitled to admission to the bar without further examination.

AN ACT to establish a uniform standard of admission to the bar of this State, and to punish persons violating the provisions of this act.

Be it enacted by the Legislature of the State of Minnesota.

SECTION 1. As soon as possible after the passage and approval of this act the Justices of the Supreme Court of this State shall appoint from the members of the bar of Minnesota, learned in law, one person from each congressional district now or hereafter created, to constitute a state board of examiners in law.

SEC. 2. The term of office of said board shall be as follows:

Three shall be appointed for one year, two shall be appointed for two years, and two shall be appointed for three years, and their successors shall receive their appointment in like manner for terms of three years each; but in case of a vacancy occurring by death or otherwise, there shall be sppointed in a like manner a person to serve through the unexpired term of the member to whose place he is appointed.

SEC. 3. The said board shall elect a president, secretary and treasurer; shall have its headquarters at the Capitol of the State; shall have a common seal; and the president and secretary shall have the power to administer oaths; the said board shall at least three times in each year hold public examinations for admission to the bar of the State, which examinations shall be both written and oral, in such place in this State as the Supreme Court shall direct, and at such times as the said board shall determine; the said

board shall keep a record of all its proceedings, and also a record of all applications for admission to the bar, and shall enroll in a book kept for that purpose, the name of each person admitted as an attorney at law.

SEC. 4. The said board shall, as soon as practicable thereafter, report the result of all examinations to the Supreme Court, with such recommendations as to said board shall seem just, and the Supreme Court shall, after considering said report and said recommendations, enter an order in each case authorizing or directing said board to reject such applicant, or to issue to him a certificate of admission to the bar.

SEC. 5. The said board shall receive from each person applying for examination the sum of five dollars ($5.00) as a fee therefor, and all fees received by said board shall be deposited with the treasurer of said board and applied toward the expenses and compensation of the respective members of said board.

SEC. 6. There shall be paid out of the treasury of said board to each examiner appointed as aforesaid, a compensation not exceeding ten dollars ($10.00) per day and his actual necessary expenses in going to, holding and returning from any such examination.

SEC. 7. No person shall hereafter be admitted to practice as an attorney and counselor at law, or commence, conduct or defend any action or proceeding in any of the courts of record of this State, in which he is not a party concerned either by using or subscribing his own or the name or names of any other person or persons, unless he has complied with and been admitted under and pursuant to such rules as the Supreme Court of this State shall prescribe; Provided, that the provisions of this act sh all not apply to or affect persons admitted to the bar of this State under pre-existing laws.

Provided, That graduates from the Law Department of the University of Minnesota shall, upon presentation of their diploma from said University to the Supreme Court, or any other District Court of this State, at any time within two (2) years from the date of such diploma, be entitled to a certificate of admission to the bar without any examination or fee whatever; and such court shall thereupon enter an order authorizing and directing the clerk of said court to issue to such graduate a certificate of admission to the bar, upon proof satisfactory to said court that such graduate is a citizen of the United States, a citizen and resident of the State of Minnesota; that he is twents-one (21) years of age, of good moral character, and upon his subscribing such oath as is now provided by statute for persons upon their admission to the bar.

SEC. 8. Any person who shall appear as an attorney or counselor at law in any action or proceeding in any court of record in this State to maintain or defend the same except in his own behalf when a party thereto, unless he has been admitted to the bar of this State, shall be deemed guilty of a misdemeanor, and upon convicted thereof shall be fined not less than fifty ($50) nor more than one hundred dollars ($100), and it shall be the duty of the respective county attorneys in this State to prosecute violations of this act; but the District Courts of this State shall have sole original jurisdiction of this offence.

Provided, That any attorney or counselor residing in any of the other states or territories wherein he has been admitted to practice law, and who shall attend any term of the Supreme or District Courts of this State for the purpose of trying or participating in the trial or proceedings of any action or proceeding therein pending, may be permitted to try or participate in the trial or proceedings in such action or proceeding without being subject to provisions of this act.

SEC. 9. Chapter ninety-three (93) of the general laws of one thousand eight hundred and eighty-nine (1889) and sections three (3), four (4), and eight (8) of chapter eighty-eight (88) of the General Statutes of one thousand eight

hundred and seventy-eight (1878), and chapter one hundred and four (104) of the General Laws of one thousand eight hundred and eighty-three (1883), are hereby repealed.

SEC. 10. This act shall take effect and be in force from and after its passage.

LAW BOOKS.

Students will be expected to furnish themselves with such text-books as the faculty shall adopt for use in the recitation room. In all cases they will be such books as will be found necessary in the student's practice.

In addition to these, should any of the students desire to have at hand other standard works upon the subjects taught, a judicious selection could be made from the following list, and the faculty would be glad to aid them in making such a selection:

Contracts—Parsons, Anson, Metcalf, Pollock, Bishop.

Bailments—Schouler, Edwards, Story.

Sales—Benjamin, Blackburn.

Domestic Relations—Schouler or Reeves on Domestic Relations; Schouler on Husband and Wife; Bishop on Marriage and Divorce; Bishop on Married Women; Cord on Married Women; Macdonnell on Master and Servant; Simpson on Infants.

Corporations—Angell and Ames, Field, Morawetz, Taylor; Dillon on Municipal Corporations; Thompson on Liability of Stockholders.

Bills and Notes—Byles; Chalmers, Parsons; Daniels on Negotiable Instruments; Edwards on Bills and Notes; Bigelow's Leading Cases; Ames' Leading Cases.

Torts—Cooley, Bigelow, Addison; Wharton on Negligence.

Evidence—Greenleaf on Evidence; Best's Principles of Evidence; Stephen's Digest of Law of Evidence; Wharton or Starkie on Evidence; Rogers on Expert Testimony; Rosco's Criminal Evidence.

Real Property—Williams, Washburn, Tiedman, Boone, Willard.

Partnership—Lindley, Parsons, Bates, Pollock.

Wills and Administration of Estates—Redfield on Wills; Jarman on Wills (Randolph & Talcott's or Bigelow's edition); Hawkins on Construction of Wills; Schouler on Wills; Williams on Executors.

Common Carriers—Hutchinson on Carriers; Thompson on Passenger Carriers; Redfield or Pierce on Railways.

Equity—Pomeroy's or Storey's Equity Jurisprudence; Snell's, Bispham's or Adams' Equity.

Criminal Law—Harris, Bishop, Wharton, May, Washburn; Stephen's Digest of the Criminal Law; Stephen's History of the Criminal Law.

Pleading—Gould, Stephens. Chatty, Hurd; Bliss on Code Pleading; Story's Equity Pleading; Pomeroy on Remedial Rights.

Agency—Evans, Story, Wharton.

Damages—Sutherland, Sedgwick.

Mortgages—Jones, Thomas.

Insurance—May on Insurance; Wood on Fire Insurance; Bliss on Fire Insurance; Arnold on Marine Insurance.

Shipping and Admiralty—Abbott, Conkling, Desty.

Easements—Goddard, Washburn.

Taxation—Cooley, Burroughs, Desty.

Medical Jurisprudence—Ewell, Wharton and Stille, Beck.

Constutional History—Hallam's Constitutional History of England (1485-1760); May's Constitutional History of England (1760-1860); Yonge's Constitutional History of England (1760-1860); Stubb's Constitutional History of England; Bagehot's English Constitution; Gheist's English Constitutional History; Curtis's History of the Constitution of the United States; Bancroft's History of the United States; Von Holst's Constitutional History of the United States.

Constitutional and State Law—Pomeroy's Introduction to the Constitutional Law of the United States; Von Holst's Constitutional Law of the United States; Cooley's Principles of Constitutional Law; Cooley's Constitutional Limitations; Story's Commentaries on the Constitution of the United States; Sedgwick on Constitutional and Statutory Law; Jameson's Constitutional Conventions; Bishop's Written Law; Maxwell on the Interpretation of Statutes; Farrar's Manual of the Constitution of the United States; Stearn's Concordance to the Constitution of the United States.

Jurisprudence—Holland's Elements of Jurisprudence; Austin's Lectures on Jurisprudence; Lorimer's Principles of Jurisprudence; Amos on the Science of Law.

International Law—Wheaton's Elements of International Law; Hallis International Law; Davis' International Law; Story's Conflict of Laws.

Roman Law—Morey's Outlines on Roman Law; Hadley's Introduction to Roman Law; Mackenzie's Roman Law; Moyle's Justinian; Roby's Introduction to the Digest; Muirhead's Roman Law.

CALENDAR, 1893-94.

September 5, Tuesday, 9 a. m.—Examination for entrance, and enrollment, in law building.

September 12, Tuesday, 2 p. m.—First lectures of the course.

December 23, Saturday—Holiday vacation begins.

January 9, 1893, Tuesday, 2 p. m.—Lectures resumed.
May 29, Tuesday—Senior examination for degrees.
June 7—Commencement.

For further particulars write to the President, Cyrus Northrop, Minneapolis, or to the Dean, W. S. Pattee, and all information necessary for the student will be furnished promptly.

The Dean will be pleased to correspond with any one who is thinking of pursuing a course of legal study, and he will gladly aid any student in selecting the proper books.

Letters addressed to him at Minneapolis, Minnesota, will receive prompt attention.

EXPENSES.

These depend largely upon the tastes and habits of the individual. Students find no difficulty in obtaining board among the people of the city.

Good board can be obtained for $4 per week. Students board in clubs at less expense.

THE

DEPARTMENT OF MEDICINE

The Department of Medicine.

CYRUS NORTHROP, LL. D., President.
PERRY H. MILLARD, M. D., Dean.

Under the provisions of the charter creating the University of Minnesota, it is composed of four departments, to-wit: A Department of Science, Literature and Arts; a Department of Agriculture and Mechanic Arts; a Department of Law; and a Department of Medicine.

The Department of Medicine is composed of the following named colleges:

The college of Medicine and Surgery, the college of Homeopathic Medicine and Surgery, the college of Dentistry, and the college of Pharmacy.

The students of all the colleges grouped under this department of the University attend lectures in common upon the primary branches, and must pass satisfactory examinations in these studies before they complete the course or enter for final examinations in any of the colleges composing the department. They attend lectures in common upon such other branches as the faculty, under whom the studies are pursued, may elect.

THE COLLEGE OF MEDICINE AND SURGERY.

THE FACULTY.

CYRUS NORTHROP, LL. D., *President.*
PERRY H. MILLARD, M. D., *Dean and Professor of the Principles of Surgery and of Medical Jurisprudence.*
THOS. G. LEE, B. S., M. D., *Professor of Histology, Embryology, Bacteriology and Clinical Microscopy.*
GEORGE A. HENDRICKS, M. S., M. D., *Professor of Anatomy.*
R. O. BEARD, M. D. *Professor of Physiology.*
C. J. BELL, A. M., *Professor of Chemistry.*
H. M. BRACKEN, M. D., *Professor of Materia Medica and Therapeutics.*
CHARLES H. HUNTER, A. M., M. D., *Professor of the Theory and Practice of Medicine.*
EVERTON J. ABBOTT, A. B., M. D., *Associate Professor of the Practice of Medicine.*
J. W. BELL, M. D., *Professor of Physical Diagnosis and Clinical Medicine.*
CHARLES A. WHEATON, M. D., *Professor of the Practice of Surgery and Clinical Surgery.*
FREDERICK A. DUNSMOOR, M. D., *Professor of Operative and Clinical Surgery.*
CHAS. L. GREEN, M. D., *Professor of Surgical Anatomy.*
PARKS RITCHIE, M. D., *Professor of Obstetrics.*
A. B. CATES, A. M., M. D., *Clinical Professor of Obstetrics.*
J. CLARK STEWART, B. S., M. D., *Professor of Pathology.*
ALEX. J. STONE, M. D.. LL. D., *Professor of Diseases of Women.*
AMOS W. ABBOTT, M. D., *Clinical Professor of Diseases of Women.*
A. MCLAREN, A. B., M. D., *Clinical Professor of Gynecology.*
JOHN F. FULTON, PH. D., M. D., *Professor of Ophthalmology, Otology and Hygiene.*
FRANK ALLPORT, M. D., *Clinical Professor of Ophthalmology and Otology.*
C. EUGENE RIGGS, A. M., M. D., *Professor of Nervous and Mental Diseases.*
W. A. JONES, M. D., *Clinical Professor of Diseases of the Nervous System.*
JAMES H. DUNN, M. D., *Professor of Diseases of the Genito-Urinary Organs.*
CHAS. L. WELLS, A. M., M. D., *Professor of Diseases of Children.*
JAMES E. MOORE, M. D., *Professor of Orthopaedic Surgery.*
M. P. VANDERHORCK, M. D., *Professor of Diseases of the Skin.*
W. S. LATON, M. D., *Professor of Diseases of the Nose and Throat.*
FRANK BURTON, M. D., *Demonstrator of Anatomy.*
H. L. STAPLES, M. D., *Instructor in Medical and Pharmaceutical Latin.*

THE COLLEGE YEAR.

The sixth year of instruction will begin on Tuesday morning, October 10th, 1893, and will continue eight months.

BUILDINGS AND EQUIPMENT.

The legislature of 1891 appropriated eighty thousand dollars for medical buildings and for the equipment of the medical department. These new buildings have been completed and equipped, and are now in use; they answer the demands of modern medical education. They are situated upon the campus and afford the students of medicine the advantages of University associations. They are readily reached by railway and electric car lines.

LABORATORIES AND LIBRARIES.

The laboratories of anatomy, physiology and materia medica are situated in the medical building; those of chemistry histology and pathology in a separate building especially adapted for this purpose. A good foundation has been laid for the equipment of these laboratories and they will be brought speedily to the point of completion in their outfit.

The general museum of the University comprises the collections of the geological and natural history survey of the State. It contains upwards of twelve thousand specimens and will be available to students for the purposes of examination and study.

The general library of the University contains about thirty thousand volumes and is open daily for the use of students of all departments.

In addition, a large medical libary is located in the medical building, where its usefulness has been established by the fact that some nine hundred volumes have been used by the students each month during the term. It furnishes a means of collateral study which the students might not otherwise enjoy.

LENGTH OF COURSE.

This college requires of its students four years of medical study and three annual courses of lectures of eight months each.

Students are advised to devote four years to their college work before applying for the degree of doctor of medicine. The schedule is so arranged that a four years' course may be taken to advantage. It will be made obligatory upon new matriculates in the near future.

ADVANCED STANDING.

Students from other colleges who desire to take advanced standing will be required to present satisfactory evidence that

their completed studies are an equivalent of similar work done in this college, or in the absence of such evidence, must undergo an examination in such branches conducted by the respective chairs in this college.

Examinations for advanced standing will occur during the last two weeks of the regular session and on the first Tuesday in October.

Students or practitioners of medicine can pursue special courses of study in one or two branches upon the payment of a fee of twenty-five dollars. Work completed in such special courses will be properly credited toward future class-standing, but no certificate of "time" will be issued to unclassified or special students.

LABORATORY AND CLINICAL INSTRUCTION.

Laboratory work and clinical teaching is intended to be the dominant characteristic of the course in this college.

The student is taught the technique of the microscope and does practical work in the preparation and recognition of both normal and diseased tissues in embryology; in bacteriology; in physiological chemistry; in inorganic and general chemistry; in chemical and microscopical urinalysis, and in anatomical dissections. Demonstrations in anatomy, physiology and chemistry accompany the didactic teaching. The laboratories are under the direct charge of the didactic professors.

The college draws from the University Dispensary, in the Medical building and from the larger hospitals of the cities of Minneapolis and St. Paul, its clinical material.

THE UNIVERSITY FREE DISPENSARY,

Is the outdoor branch of the college clinics. Since the removal of the department to the campus, it has been installed in commodious quarters in the basement of the new building. The daily attendance of patients is rapidly increasing. The dispensary staff consists of the clinical teachers of the faculty and of carefully chosen assistants. The senior class is divided into small sections which, in turn, attend the several divisions of the dispensary and aid in the examination of patients, the diagnosis of disease, the writing of prescriptions and the conduct of minor operations.

WALKING CLINICS.

Upon Wednesday of each week several hours are occupied in the conduct of walking clinics, for the benefit of the senior and junior classes of the college. These are held in the medical building and are under the direction of the clinical teachers.

HOSPITAL CLINICS.

Saturday of each week is devoted to hospital clinics, conducted by the bedside or in the operating rooms of the hospitals of Minneapolis and St. Paul. The senior and junior classes alternate in the two cities.

In Minneapolis the wards of the city hospital are frequently open to the students of this college and occasional surgical clinics are held in its operating rooms.

ST. MARY'S HOSPITAL.

St. Mary's Hospital has upon its regular staff four members of this faculty. Its management has seconded the efforts of the staff to make the hospital useful to medical students by providing a roomy amphitheatre of modern construction, in which seventy five spectators can be accommodated. The hospital also opens its wards for the bedside study of disease. Surgical and medical clinics are often held here upon the weekly clinic day.

ST. BARNABAS' HOSPITAL.

St. Barnabas Hospital has also generously equipped an amphitheatre within which classes of fifty students can be gathered. Bedside instruction is given freely in its wards to the students of this college. Three members of the faculty are upon its attendant staff. Clinics are usually conducted in this amphitheatre on Saturdays.

ASBURY METHODIST HOSPITAL.

The attending and consulting staff of this new hospital is very largely composed of members of the faculty of this college. It has a commodious amphitheatre, seating one hundred and twenty-five spectators. Its wards are open to students for bedside instruction. It accommodates fifty patients. Weekly clinics of both surgical and medical character are held by the college clinicians.

ST. ANTHONY HOSPITAL

also welcomes the students to its wards on Saturday of each week. While a private hospital, its doors are open to the faculty for clinical purposes.

In St. Paul, the clinicians of the faculty, resident in that city, assisted by other staff physicians, conduct the hospital clinics on each Saturday of the term.

ST. JOSEPH'S HOSPITAL.

The authorities of St. Joseph's Hospital have generously constructed an amphitheatre for the benefit of the students of the

college, where an excellent course in clinical instruction will continue as in the past. This is the largest hospital in the Northwest, and affords most excellent surgical advantages. A large number of operations were made before the class in this amphitheatre during the last session of lectures. The number of occupied beds in this hospital averages over one hundred.

CITY HOSPITAL.

The east wing of this large structure is completed and occupied. Upwards of 1,500 patients were treated in the wards of this hospital the last year. Here are encountered a very large number of emergency cases so necessary in affording proper clinical instruction.

A new visiting staff has recently been appointed containing a generous representation of members of this faculty. The new house staff was recently appointed from among the graduates of this college. Through the kindness of the superintendent, Dr. A. B. Ancker, and the Board of Control, we are assured that students will be afforded the amplest clinical facilities.

ST. LUKE'S HOSPITAL

Has recently been completed and now occupies a new building, which possesses all the most desirable features of modern hospital architecture. It is one of the finest hospital structures in the west. It is furnished with an amphitheatre for the benefit of students and has a thoroughly modern operating room.

COURSE OF STUDY.

I. YEAR.	II. YEAR.	III. YEAR.	IV. YEAR.
Embryology. Anatomy. Chemistry. Histology. Physiology. Materia Medica. Laboratory Work.	Bacteriology. Medical Jurisprudence. Theory and Practice. Clinical Medicine. Obstetrics. Diseases of Children. Physical Diagnosis Hygiene. Surgery.	Theory & Practice. Clinical Medicine. Physical Diagnosis Surgery. Gynecology. Pathology. Neurology. Ophthalmology. Dermatology. Laryngology. Clinical instruction in all special branches. Electro-Therapy. Otology. Genito-Urinary. Orthopaedia. Surgical Anatomy. Therapeutics.	A continuation of practice and surgery, of at least two of the special branches and the special course in bacteriology, water analysis, etc.

FEES.

Students of this college will be uniformly charged as follows:

Matriculation (payable annually)	$10.00
Annual dues	40.00

Material for dissection, $10.00 per part; bodies are divided into four parts for dissection.

Histological laboratory fee	$10.00
Physiological laboratory fee	5.00
Pathological laboratory fee	5.00
Qualitative analysis	10.00
Urinalysis and Toxicology	10.00
Diploma	10.00

STATEMENT OF YEARLY EXPENSE ACCOUNT.

First Year.

Matriculation	$10.00
Annual dues	40.00
Dissecting	10.00
Qualitative Analysis	10.00
Histology	10.00
	$80.00

Second Year.

Matriculation	$10.00
Annual dues	40.00
Physiology	5.00
Dissecting	10.00
Toxicology and Urinalysis	10.00
	$75.00

Third Year.

Matriculation	$10.00
Annual dues	40.00
Pathological Laboratory	5.00
Diploma	10.00
	$65.00
Total for course	$220.00
The tuition fee for students classified as "specials"	$25.00

Facilities for special laboratory courses in embryology, physiology, bacteriology and water analysis will be afforded those desirous of taking special instruction. The fee is nominal.

CALENDAR, 1893-4.

October 10th, 9 A. M.—Entrance examination.
2 P. M.—Examinations for conditioned students.
8 P. M. Opening lecture.
October 11th, 9 A. M.—Lecture course begins.
November 30th.—Thanksgiving Day.
December 23d.—Christmas vacation begins.
January 9th.—Lectures renewed.
February 22d.—Washington Birthday.
May 22d.—Close of lecture course.
May 23d.—Examinations begin.
June 7th.—Commencement exercises.

ENTRANCE EXAMINATIONS.

Two entrance examinations are held annually. The first regular examination will commence at 9 A. M. on the second Tuesday in October. The second occurs on the last Saturday in May. This examination gives entrance to the Department of Medicine in all its four colleges and is conducted by the Deans and the members of the Executive Committee. The examination consists of:

(1.) An English composition of not less than two hundred words.

(2.) The translation of easy Latin prose and the elements of Latin grammar.

(3.) The elements of algebra.

(4.) The elements of physics.

ENROLLMENT.

Students are assigned seats in the order of their matriculation. The matriculation fees and annual dues are payable in advance. The laboratory fees are payable at the beginning of each laboratory course of instruction. After payment of his dues to the Registrar, the student will report to the Dean for classification and subsequently to the Registrar for permanent enrollment. Students who fail to pass the entrance examinations will have all fees returned to them.

COURSE OF INSTRUCTION.

The course of study in the college of Medicine and Surgery embraces the following subjects:

ANATOMY.

The study of anatomy is graded and extends through three years. Each class receives a separate course of lectures, and each class is examined at the close of the term, upon its special work.

FIRST YEAR—Lectures and recitations in Osteology, Syndesmology and Myology; one course, two hours per week, 64 lectures. Also attendance upon the lectures to the second year students.

SECOND YEAR—Lectures and recitations in descriptive anatomy, one course, two hours per week, 64 lectures.

THIRD YEAR—Lectures and recitations in topographical and surgical anatomy, one course, one hour per week, 16 lectures.

LABORATORY WORK—Dissection of whole body, one course fifteen hours per week (afternoons); 14 weeks.

Dissecting is done in the second year. The practical work in anatomy is done under the supervision of the professor of anatomy and direction of the demonstrator.

TEXT BOOKS—Quain, 10th Edition; Gray, 11th Edition. Holden's Practical Anatomy; Darling and Ranny, Treve's Applied Anatomy, Owen's Manual.

COLLATERAL READING—Ranney's Applied Anatomy of the Nervous System, McClellan's Regional Anatomy, Chaveau's Comparative Anatomy, Gagenbaur's Elements of Comparative Anatomy, Wilder and Gage's Anatomical Technology, Flower's Osteology of Mammals, Owen's Skeleton and Teeth.

PHYSIOLOGY.

The study of physiology is graded in the first and second years. Students of the first year attend two lectures or recitations each week on the following subjects: The physiology of cell-life; the blood; the muscular and nervous tissues; the vascular mechanism; the digestive system; respiration and the organs of excretion.

Junior students attend two lectures or recitations each week, in brief review of the work of the first year, and in study of such further topics as metabolism, nutrition, dietics, reproduction and the nervous system. Three hours in each week are devoted to physiological chemistry and to demonstrations in the physiological laboratory. Examinations are conducted at the close of each year.

TEXT BOOKS.—Foster's Physiology, 5th Edition.

COLLATERAL READING.—Haller, Landois and Stirling, Chapman, Martin and Yeo.

CHEMISTRY.

FIRST YEAR.—Lectures on inorganic chemistry, laboratory, general chemistry and qualitative analysis.

SECOND YEAR.—Lectures on Medical Chemistry, elements of organic chemistry, toxicology and laboratory work.

TEXT BOOKS RECOMMENDED.—Remsen, Inorganic Chemistry; Tyson, Examination of the Urine; Reese's Toxicology; Taylor on Poisons.

HISTOLOGY AND EMBRYOLOGY.

Lectures, recitations and laboratory work. Each student will receive carefully prepared specimens illustrative of the various tissues and organs of the body, which he will preserve for permanent use, and from which drawings will be made. Didactic and practical instruction in embryology will also be given in connection with the work in histology. Practical instruction will be given in the methods of preserving and preparing mater-

ial for microscopic examination. Special facilities are offered for advanced work and original research in histology and embryology.

TEXT-BOOKS.—Quain's Anatomy, 10th Edition, Klein's Elements of Histology, Pruden's Practical Histology, Schaefer's Essentials of Histology. If possible, each person should provide himself with a microscope, which can be obtained complete for $45.00 and upwards.

BACTERIOLOGY.

Lectures and recitations illustrated by microscopic preparations and cultures of various pathogenic bacteria. Opportunity is offered in the laboratory for special research work.

URINALYSIS.

Laboratory instruction with practical examination of the urine and other body fluids in their relation to disease, and as aids in diagnosis.

TEXT-BOOKS.—Tyson, Practical Examination of Urine.

PATHOLOGY.

Demonstrations, recitations and laboratory work.

Gross pathology will be taught by lectures, oral and written quizzes on the text-book, and demonstrated as far as practicable by autopsies made by members of the class under the supervision of the professor.

A large number of valuable specimens which are accumulating in the museum will be utilized to illustrate diseased conditions.

Each member of the class will receive and mount permanently a series of 75 to 100 carefully prepared sections, illustrating tumors, inflammations and the more important lesions of the viscera.

TEXT-BOOK.—Delafield & Prudden's Handbook of Pathological Anatomy, 1892.

COLLATERAL READING—Ziegler's Handbook of Pathology (in press).

MATERIA MEDICA AND THERAPEUTICS.

The work in Materia Medica and Therapeutics covers a period of three years. Examinations are held at the end of each year on the branches of the respective years. A short course in medical botany is afforded the students of the freshman class. Materia medica is completed at the end of the junior year. A course of lectures is given the senior class upon therapeutics.

TEXT-BOOK.—Botany, Johnstone; Materia Medica and Therapeutics, Brunton, Wood and Bartholow.

OBSTETRICS.

This subject is taught by didactic lectures, charts and demonstrations on the manikin. Excellent clinical facilities are afforded at the City Hospital in St. Paul and in the hospitals of Minneapolis. Each member of the senior class will be required to participate in one or more deliveries.

TEXT-BOOKS.—Lusk, Charpentier, Galabin.

SURGERY.

The didactic course consists of three lectures weekly during the entire session. A laboratory course is afforded, consisting of bandaging, the use of surgical apparatus, the manufacture and care of antiseptic dressings, etc.

The clinical facilities in this branch are most ample.

TEXT-BOOKS.—American Text-Book of Surgery, Robert's Practical Surgery, Senn's Principles of Surgery.

COLLATERAL READING.—Agnew's and Ashurst's International Encyclopedia.

PRACTICE OF MEDICINE.

Lectures, recitations and clinical instruction. Bedside instruction will be a special feature in the teaching of this branch.

TEXT-BOOKS.—Osler, Hilton Fagge.

COLLATERAL READING.—Flint, Reynold's System, Loomis, Niemeyer and Roberts.

DISEASES OF WOMEN.

Lectures, clinical instruction and attendance upon operations. The opportunities of practical instruction in this branch will be ample.

TEXT-BOOKS.—Thomas, Schroeder, Byford.

COLLATERAL READING.—Emmett, Hart and Barbour.

EYE AND EAR.

Lectures, clinical instruction and recitations.

TEXT-BOOKS.—Noyes, Nettleship (eye), Roosa (ear) and Williams.

COLLATERAL READING.—Juler, Stellwag, Soelberg, Wells and Politzer.

NERVOUS AND MENTAL DISEASES.

Lectures and clinical instruction. Special opportunities will be afforded students in differential diagnosis.

TEXT-BOOKS.—Edinger's Anatomy of the Central Nervous System; Gower's Nervous Diseases; Bramwell (cord), Liebig and Rohe's Medical Electricity; Spitzka's Insanity.

COLLATERAL READING.—Bevan-Lewis of Clouston's Mental Diseases; Bastians Paralysis; Ferrier's Functions of the Brain and Cerebral Localization; Nervous Diseases, Ranney, Hammond and Strumpell.

GENITO-URINARY DISEASES.

Lectures and clinical instruction.

TEXT-BOOKS.—Thompson's Diseases of the Urinary Organs.

COLLATERAL READING.—Van Buren and Keyes and Bumstead and Taylor.

DISEASES OF CHILDREN.

Lectures, didactic and clinical in their character, will be given upon this branch.

TEXT-BOOKS.—J. Lewis Smith, Eustace Smith, Meigs and Pepper, and Goodhart.

DISEASES OF THE SKIN.

Lectures and clinical instruction.

TEXT-BOOKS.—Duhring; Crocker.

COLLATERAL READING.—Hyde and Nan Harlingen.

LARYNGOLOGY.

Lectures and the use of the Laryngoscope.

TEXT-BOOKS.—McKenzie.

COLLATERAL READING.—Bosworth.

PHYSICAL DIAGNOSIS.

Lectures, section exercises, bedside and clinical instruction.

TEXT-BOOKS.—Loomis, Hudson; Vierordt.

COLLATERAL READING.—Bramwell (heart); Fox (lungs).

ORTHOPAEDIC SURGERY.

Lectures and clinics.

TEXT-BOOKS.—Reeve's Practical Orthopaedia.

COLLATERAL READING.—Sayre's Orthopædic Surgery; Lovett on Diseases of the Hip Joint.

HYGIENE.

Lectures.

TEXT-BOOKS.—Parks.

COLLATERAL READING.—Richardson Preventive Medicine, Buck's Hygiene.

MEDICAL JURISPRUDENCE.

Lectures.

TEXT-BOOKS.—Reese and Tidy.

COLLATERAL READING.—Taylor's Principles and Practice of Medical Jurisprudence; Wharton and Stille.

PROFESSIONAL EXAMINATIONS.

The following regulations govern the professional examinations:

Examinations will be conducted at the end of the first, second and third year's work. An examination will be held the first year upon the subjects of anatomy, chemistry, physiology and

histology; the examination in anatomy will be mainly confined to osteology and syndesmology; in chemistry the student will be expected to complete his work in general chemistry and qualitative analysis; the final examinations in anatomy, chemistry, physiology and materia medica will be conducted at the end of the second year. The examinations at the end of the third year, for those entering the graduating class, will be divided into five sections.

These examinations are held during the last two weeks of the regular session. Examinations are held the first week of the session for students conditioned in former examinations and for new students desiring advanced standing.

The standing of students is determined by term recitations and final written examinations. Attendance upon at least four-fifths of the lectures under each chair is required in order that the student be allowed to enter for final examination, or to receive a certificate of attendance.

GRADUATION.

Candidates for graduation and for the degrees conferred by the University upon graduates of this college, must posses the following qualifications: (1) They must be upwards of twenty-one years of age; (2) they must be of good moral character; (3) they must have spent four full years in the study of medicine; (4) they must have attended three full courses of lectures, the last of which, at least, must have been in this University, and the two former in this or some other recognized university or college of medicine, and (5) they must have sustained satisfactory examinations in the various branches of study, in accordance with the rules of the department.

DEGREE.

Graduates of this college will receive the degree of Doctor of Medicine, (M. D.).

HOSPITAL APPOINTMENTS.

Through the kindness of Board of Trustees of the hospitals for the insane, arrangements have been made whereby two of the graduates of this college will receive appointments, yearly, as assistant physicians at each the hospitals for the insane at St. Peter and Rochester. These four appointments are secured as the result of a competitive examination, conducted by the Professor of Nervous and Mental Diseases in this college.

The opening lecture of the session will be delivered by John F. Fulton, Ph. D., M. D. The lecture will occur at 8 o'clock, a. m., Oct. 10th, 1893.

NOTICE.—All correspondence relating to this college should be addressed to Dr. Perry H. Millard, Dean, University of Minnesota, Minneapolis, Minn.

COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY.

THE FACULTY.

CYRUS NORTHROP, LL. D., *President.*
WILLIAM E. LEONARD, A. B., M. D., *Professor of Materia Medica and Therapeutics.*
HENRY HUTCHINSON, M. D., *Professor of the Theory and Practice of Medicine.*
GEORGE E. RICKER, A. B., M. D., *Professor of Clinical Medicine and Physical Diagnosis.*
ROBERT D. MATCHAN, M. D., *Professor of the Principles and Practice of Surgery.*
WARREN S. BRIGGS, B. S., M. D., *Professor of Clinical and Orthopædic Surgery.*
HENRY C. LEONARD, B. S., M. D., *Professor of Obstetrics.*
B. HARVEY OGDEN, A. M., M. D., *Professor of Gynecology and Genito-Urinary Diseases.*
ALBERT F. HIGBEE, M. D., *Clinical Professor of Gynecology.*
JOHN F. BEAUMONT, M. D., *Professor of Ophthalmology.*
HENRY W. BRAZIE, M. D., *Dean and Professor of Pædology.*
EUGENE L. MANN, A. B., M. D. *Professor of the Diseases of the Heart and Respiratory Organs.*
D. A. STRICKLER, M. D., *Professor of Otology and Rhinology.*
HENRY C. ALDRICH, D. D. S., M. D., *Professor of Skin and Venereal Diseases.*
A. P. WILLIAMSON, A. M., M. D., *Professor of Mental and Nervous Diseases.*

[Instruction in the primary branches is received in common with the students of the other colleges, in the following chairs:]

GEORGE A. HENDRICKS, M. S., M. D., *Professor of Anatomy.*
RICHARD O. BEARD, M. D., *Professor of Physiology.*
C. J. BELL, A. M., *Professor of Chemistry.*
PERRY H. MILLARD, M. D., *Professor of Medical Jurisprudence.*
JOHN F. FULTON, M. D., *Professor of Hygiene.*
W. XAVIER SUDDUTH, A. M., M, D., D. D. S., *Professor of Oral Surgery.*
THOMAS G. LEE, A. M., M. D., *Professor of Histology and Bacteriology.*

The faculty, in presenting its sixth annual announcement to the profession, desires to emphasize the high standard of its curriculum. The course has been extended to include four years of study and attendance upon three courses of lectures. Students are requested, however, to take four courses of lectures if possible. Students, graduates of the department of Science, Literature and the Arts of this University, are exempted from one year's study, and are admitted to advanced standing in histology,

physiology and chemistry. Students who are graduates of other recognized colleges and universities will likewise be admitted to advanced standing if the facilities in chemistry and biology have been ample. Where practicable, students are requested to complete their college course before commencing the study of medicine. Such students are able to complete the work in three years that would otherwise require four full courses of lectures. Matriculates must demonstrate their fitness for professional study by evincing their possession of a fair degree of preliminary education. They must pass the primary branches before entering for advanced or final examinations.

DISPENSARY AND COLLEGE CLINICS.

The Dispensary, located near the college building, affords ample opportunity for the study of all forms of disease usually met with in office practice. Patients present themselves in large numbers (from 50 to 75) daily, and are assigned to particular departments according to the nature of their diseases. The classes are so divided and arranged as to afford every student ample opportunity to familiarize himself with the best methods of diagnosis and treatment of the various maladies, medical and surgical, with which the clinic abounds. Special attention is directed to the fact that these college clinics are conducted daily throughout the entire year, and students and practitioners are cordially invited to attend them at all times.

COURSE OF INSTRUCTION.

I. YEAR.	*II. YEAR.	†III. YEAR.	IV. YEAR.
Embryology.	Bacteriology.	Gynecology.	A continuation of practice and surgery, of at least two of the special branches and the special courses in bacteriology, water analysis, etc.
Anatomy.	Medical Jurisprudence.	Pathology.	
Chemistry.	Theory and Practice.	Neurology.	
Histology.	Clinical Medicine.	Opthalmology.	
Physiology.	Obstetrics.	Dermatology.	
Materia Medica.	Diseases of Children.	Laryngology.	
Laboratory work.	Physical Diagnosis.	Clinical instruction in all branches.	
	Hygiene.	Electro-Therapy.	
	Surgery.	Otology.	
	Clinical Surgery.	Genito-Urinary.	
	Clinical Instruction.	Orthopaedia.	
		Surgical Anatomy.	
		Therapeutics.	

* Continuation of first year studies, except histology and embryology.
† Continuation of second year studies without those of the first year and without medical jurisprudence and hygiene.

ANNOUNCEMENT.

In the organization of this college the Board of Regents of the University of Minnesota has aimed to secure the united efforts of the homeopathic practitioners of the State in the establishment of a college broad in its scope and complete in its teaching corps.

The college of Homeopathic Medicine and Surgery confidently appeals, therefore, to the profession of the northwest to second its efforts to educate thoroughly those students who wish to practice homeopathy.

Every practitioner fully appreciates the great advantage to be derived by the practical study of disease. The young physician who has depended upon his reading and attendance upon didactic lectures, to the exclusion of bed-side or clinical study, will find himself hampered and embarrased at almost every step in his career. Practical points in practice are only acquired by slow degrees, and often at the expense of the patient's welfare or of professional reputation. Hence the importance of attending at least one course of lectures in a large city, where material for dissection and surgical demonstration is fresh and abundant, and where there are large hospitals and clinics constantly crowded with every variety of disease and surgical injury. The difference in the expense is but trifling, while the advantage in favor of a great metropolis incalculable. Minneapolis and St. Paul are not only great commercial centers, easily reached by a network of railroads extending to all points of the compass, but are great medical centers toward which the diseased, maimed, halt and blind wend their way in search of relief, thus filling the many hospitals with choice clinical material from all quarters of the great northwest. This college is prepared to offer unrivalled advantages to students in this respect.

The Twin Cities have been for twenty-five years—thanks to the men who have grown gray in the profession—a center of homeopathic patronage and interest. It has taken but a few years to build up in Minneapolis a hospital devoted to this system of practice which equals any in the northwest, while a similar institution in St. Paul, situated in the natural center for accidents —within two blocks of most of the railroads that enter the city, and surrounded by car shops and manufacturing industries, secures a large share of surgical cases.

Students will be admitted to both of these hospitals, as well as to the city hospitals, and will visit patients at the bedside under the direction of the various professors, who are attending physicians at these institutions.

These advantages, with those furnished by the dispensaries

of two large cities, will give unsurpassed opportunities for special study, and will make practical clinical work a feature of the college.

Hospital appointments will be open to graduates through competitive examination.

Quizzes of the nature of a daily recitation will be given by each professor upon the subjects of the previous lecture.

Senior students will have opportunity to attend out-door patients, to assist in special and general surgical operations, and to attend at least one obstetrical case during the last course of lectures.

ENTRANCE EXAMINATIONS.

Two entrance examinations are held annually. The first regular examination will commence at 9 A. M. on the second Tuesday in October. The second occurs on the last Saturday in May. This examination gives entrance to the Department of Medicine in all its four colleges and is conducted by the deans and the members of the executive committee. The examination consists of:

(1.) An English composition of not less than two hundred words.

(2.) Elements of Latin grammar; translation of easy Latin prose.

(3.) The elements of algebra.

(4.) The elements of physics.

PROFESSIONAL EXAMINATIONS.

The following regulations govern professional examinations:

Examinations will be conducted at the end of the first, second and third year's work. An examination will be held at the end of the first year upon the subjects of, anatomy, chemistry, physiology, and histology; the examination in Anatomy will be mainly confined to osteology and syndesmology; in chemistry the student will be expected to complete his work in general chemistry and qualitative analysis; the final examination in anatomy, chemistry, physiology and materia medica will be conducted at the end of the second year. The examination at the end of the third year, for those entering the graduating class, will be divided into six sections:

1. An examination in the practice of Medicine, Clinical Medicine and Physical Diagnosis.
2. Surgery, Clinical Surgery, Operative Surgery and Surgical Anatomy.
3. Obstetrics, Gynecology and Pædology.
4. Ophthalmology, Otology and Laryngology.
5. Orthopædia, Dermatology and Genito-Urinary Diseases.
6. Pathology, Bacteriology and Nervous and Mental Diseases.

COURSES OF INSTRUCTION.

ANATOMY.

The course in anatomy is graded. First year students are expected to attend all the lectures given in anatomy; they are given a separate course in osteology, syndesmology and myology. Examinations are held on these subjects at the close of the term. The lectures on descriptive, topographical and surgical anatomy are attended by first and second year students. Second year students recite upon these lectures and receive their final examinations at the close of the term. Dissecting is regarded as advanced work, and is done only in the second year. The practical work in the laboratory is under the supervision of the professor of anatomy and personal direction of the demonstrator. The laboratory work is supplemented by lectures and recitations.

TEXT-BOOKS — Grey, 11th Edition. Quain, 10th Edition. Holden's Practical Anatomy.

COLLATERAL READING—Darling and Ranney, Owen's Skeleton and Teeth, Hane's Osteology of Mammals.

FIRST YEAR—Lectures and recitations in osteology, syndesmology and myology. One course; two hours per week; 64 hours. Also attendance upon lectures on descriptive, topographical and surgical anatomy one course of two hours per week; 64 lectures.

SECOND YEAR—Lectures and recitations in descriptive, topographical and surgical anatomy; one course of 64 lectures. Laboratory work—Dissection of whole body.

PHYSIOLOGY.

Students are required to study physiology, both in the first and second years. The course is partially graded. The students of both classes will hereafter attend the same series of lectures and recitations, but special teaching in advanced physiology will be given to students of the second year. The classes will be separately examined at the close of the term. The subject will be taught by recitations and by lectures illustrated by practical demonstrations.

TEXT-BOOKS.—Foster and Yeo.

COLLATERAL READING.—Chapman and Landois and Sterling.

CHEMISTRY.

FIRST YEAR.—Lectures on inorganic chemistry. Laboratory —General chemistry and qualitative analysis.

SECOND YEAR.—Lecture on medical chemistry. Elements of organic chemistry, toxicology and urinalysis; laboratory work.

TEXT-BOOKS.—Remsen's Inorganic Chemistry. Tyson's examination of the Urine. Reese' Toxicology. Taylor on Poisons.

HISTOLOGY AND BACTERIOLOGY.

Lectures and laboratory work. The student will be taught to mount normal tissues and specimens containing bacteria. The course of normal histology and bacteriology will cover a period of not less than twelve weeks. If possible, the student should provide himself with a microscope.

TEXT-BOOKS.—Pruden's Practical Histology, Shaefer's Essential of Histology.

COLLATERAL READING.—Cornil and Ranvier.

PATHOLOGY.

Pathology and morbid anatomy will be taught by lectures, recitations, and work in the dead-house. The technique of the autopsy will be carefully dwelt upon, so that each student can learn to take a correct post-mortem examination. Diseased processes will be illustrated by fresh alcoholic specimens, that theories of disease may be as much matters of demonstration as the nature of the subject will admit.

MATERIA MEDICA AND THERAPEUTICS.

First-year students will have two lectures a week upon pharmacology, toxicology, and physiological materia medica, and pass a final examination upon these branches at the end of the year.

The instruction in pharmacology last year was kindly furnished by Mr. G. A. Babendrier, and will be repeated until further notice.

The remaining years will be devoted to the study of drugs of the homeopathic materia medica, classified according to their scientific relations in the natural kingdoms, and their practical relations in applied medicine. One lecture a month will be devoted to the principles of homeopathic therapeutics as laid down in Hahnemann's writings, and in those of such teachers as Hering, Dunham, Farrington, etc.

FIRST YEAR.—Hughe's Pharmaco-Dynamics.

SECOND AND THIRD YEARS.—Farrington's or Cowperthwaite's Materia Medica; Hahnemann's Organon.

REFERENCE BOOKS.—Allen's Hand-Book; Hering's Condensed Dunham's Lectures.

THEORY AND PRACTICE OF MEDICINE.

Lectures on the theory and practice of medicine will be delivered to students of the second and third year. The chief purpose of this chair will be to educate the student in systematic habits of investigating and treating disease.

TEXT-BOOKS.—Raue's Pathology and Diagnosis, Ruddock's Text-Book of Medicine and Surgery, Arndt's System of Medicine, Pepper's System of Medicine, Loomis' Practical Medicine, Bartholow's Practice, DaCosta's Diagnosis.

CLINICAL MEDICINE.

Abundant material for clinical instruction is furnished by the dispensary and hospital clinics. Outside dispensary work also furnishes each student of the graduating class with acute cases of disease which he can treat under the supervision of the professor of this department. In addition to physical examination and diagnosis, the special aim will be to teach the practical application of homeopathic principles in therapeutics.

TEXT-BOOKS.—Lilienthal's Therapeutics, Lippe's Repertory, Farrington's Clinical Materia Medica.

OBSTETRICS.

The teaching of this chair will embrace lectures and recitations, giving especial attention to the homeopathic treatment of the disorders incident to pregnancy and the puerperal state. members of the senior class have the privilege of attending at least one confinement case, under the special instruction of the professor of obstetrics.

TEXT-BOOK.—Leavitt.

DIDACTIC GYNECOLOGY AND GENITO-URINARY DISEASES.

A systematic course of lectures upon the physiology and pathology of the male and female generative organs, with the etiology, symptomatology and treatment of their diseases will be given. Clinical instruction and bedside attendance will be a special feature.

TEXT-BOOKS.—On Gynecology, Cowperthwaite, Ludlam.
On Genito-Urinary diseases: Franklin, Berjeau, Otis and Keyes.
COLLATERAL READING.—Thomas, Emmet, Schroeder, Mann.

PRINCIPLES AND PRACTICE OF SURGERY.

A comprehensive course of lectures on general surgery will be given. Surgical pathology will be treated in a concise and comprehensive manner. Surgical operations and methods will be thoroughly demonstrated on the living and on the cadaver.

TEXT-BOOKS — Helmuth, Bryant, Erichson, Packard and Holmes.

CLINICAL SURGERY.

The diagnosis, prognosis and homeopathic treatment of surgical diseases will be taught practically. Surgical operations will be performed before the class. There will be two clinics and one lecture each week on surgical emergencies, minor surgery and orthopædia.

TEXT-BOOKS.—Helmuth, Franklin, Gilchrist's Surgical Therapeutics, Ranney's Surgical Diagnosis, Moullin, Gross, Sayer, Bradford and Lovett.

REFERENCE BOOKS.—International Encyclopædia of Surgery.

OPHTHALMOLOGY.

The instruction in this branch will combine didactic and clinical teaching. Lectures on the anatomy, physiology and pathology of the regions involved will be thoroughly practical.

TEXT-BOOKS.—Buffum and Norton.

REFERENCE BOOKS.—Wells, Fuchs.

MENTAL AND NERVOUS DISEASES.

It will be the aim of this chair to qualify the student to detect the earliest symptoms of insanity and diseases of the nervous system. In this course particular attention will be paid to the history, causes, modes of development, characteristic symptoms pathological conditions and defining terms of the diseases of the brain and spinal cord. The sanitary, moral and medical treatment will be portrayed and elucidated.

TEXT-BOOKS.—On Insanity—Worcester, Jahr, Spitzka, Clauston, Beaudford.

REFERENCE BOOK.—Tukes' Dictionary Psychological Medicine.

TEXT-BOOKS.—On Nervous Diseases—Hart, Dana, Ranney, Omerod, Herter, Starr. Edinger, Structural Central Nervous System.

REFERENCE BOOK.—Gowers.

TEXT-BOOKS.—On Electricity—Steavenson and Jones.

PÆDOLOGY.

A thorough course will be given upon the general diseases of children and their homeopathic treatment, including their etiology, pathology and hygiene.

TEXT-BOOKS.—Hall's Jahr, Duncan, Ruddock, Teste, Guernsey, Smith, Edmonds.

REFERENCE BOOKS.—Keating's Cyclopædia of Diseases of Children.

DISEASES OF THE HEART AND RESPIRATORY ORGANS.

A course of lectures on the diseases of the heart and respiratory organs, including the larynx, will be delivered to students of the second and third years; it will be the aim of the lectures to show the logical sequence of etiology, pathology, symptomatology, diagnosis and treatment in these diseases, and to thoroughly equip the student to cope with these troubles in a scientific manner.

TEXT BOOKS.—Laryngology—Quins, Lenox Brown; Heart and Lungs—Arnk & Pepper's System of Medicine; Ingall's Diseases of Chest, Throat and Nose.

OTOLOGY AND RHINOLOGY.

It is the aim of this chair to teach by didactic and clinical lectures, the anatomy and physiology of the ear and nasal passages, method in examining cases, points in differential diagnosis, pathology and general principles of treatment of the different diseases of the ear and nasal passages.

TEXT BOOK.—*Ear*—Houghton, Winslow.

REFERENCE.—Roosa.

Nose—Irvins.

REFERENCE.—Sajous.

SKIN AND VENEREAL DISEASES.

This subject will be taught by didactic lectures illustrated by cases from the dispensaries, particular stress being laid upon the teaching of pure homeopathy.

HYGIENE.

Lectures.

TEXT BOOKS.—Parks.

COLLATERAL READING.—Richardson's Preventive Medicine, Buck's Hygiene.

MEDICAL JURISPRUDENCE.

Lectures.

TEXT BOOKS.—Reese and Tidy.

COLLATERAL READING.—Taylor's Principles and Practice of Medical Jurisprudence, Wharton and Stille.

All communications pertaining to the college of Homeopathic Medicine and Surgery should be addressed to the Dean, H. W. Brazie, M. D., 415 Tenth Street South.

THE COLLEGE OF DENTISTRY.

THE FACULTY.

CYRUS NORTHROP, LL. D., *President.*
W. XAVIER SUDDUTH, A. M., M. D., D. D. S., *Dean and Professor of Embryology, Pathology and Oral Surgery.*
THOMAS E. WEEKS, D. D. S., *Professor of Operative Dentistry and Dental Anatomy.*
CHARLES M. BAILEY, D. M. D., *Professor of Prosthetic Dentistry, Metallurgy and Orthodontia.*
WILLIAM P. DICKINSON, D. D. S., *Profcssor of Therapeutics and Crown and Bridge-work.*
GEO. A. HENDRICKS, M. S., M. D., *Professor of Anatomy.*
RICHARD O. BEARD, M. D., *Professor of Physiology.*
C. J. BELL, A. B., *Professor of Chemistry.*
H. M. BRACKEN, M. D., *Professor of Materia Medica.*
THOMAS G. LEE, A. M., M. D., *Professor of Histology and Embryology.*
GEO. E. RICKER, A. B., M. D., *Professor of Physical Diagnosis.*

INSTRUCTORS.

T. B. KREMER, D. D. S., *Clinical Instructor in Prosthetic Dentistry.*
F. E. TWITCHELL, D. M. D., *Instructor in Continuous Gum-work and Dental Art.*
J. D. JEWETT, D. D. S., *Lecturer on Anæsthesia.*
MILAND A. KNAPP, D. D. S., *Clinical Instructor in Orthodontia.*
THOMAS B. HARTZELL, *Instructor in Dental Anatomy and Assistant in Oral Surgery Clinic.*
GEO. S. MONSON, *Assistant in Technics.*
OSCAR A. WEIS, *Assistant in Operative Technics.*
CAROLINE B. EDGAR, *Assistant in Operative Clinic.*
MARY V. HARTZELL, *Assistant in Operative Clinic.*
J. M. WALLS, *Student Assistant in Crown Technics.*

ANNOUNCEMENT.

The course in the college of Dentistry of the University of Minnesota leading to the degree of D. M. D. (Doctoris in Medicina Dentaria) covers three full years of eight months each. The regular courses are classed as freshmen junior and senior.

An optional fourth year, known as the preliminary course, has been especially established for a class of students who find themselves unprepared to pass the preliminary examinations required for entrance into the regular college course. It should

commend itself to parents who are thinking of placing their children in a professional school, and have not fully decided which special branch of the healing art they shall study. The studies laid down in the curriculum fit the student for entrance into the general medical department, and if it be found, after the work done in the preliminary year, that the student is better fitted for medicine than dentistry he will be advised accordingly.

Students entering this preliminary course are allowed to take studies in the regular course, such as they may find time for, and all advanced work done in this year will count in the succeeding year's work, and will make it much easier and afford time for special work in and out of college hours. The studies available to preliminary students are Histology; Dental Anatomy, human and comparative, and Prosthetic Technics.

It is especially desired to call the attention of the members of the profession throughout the country to this course and to ask their support. They can materially assist in establishing this voluntary course on a compulsory basis by sending students who apply to them for apprenticeship directly to the college where they can receive the fullest instruction under experienced teachers.

Students are thus started right and the methods begun in the laboratory are later applied in the infirmary, still under the guidance of the several professors.

Dental students are placed upon the same footing during the first two years of their course as medical students. They are required to pass the same entrance examination and pursue the same course of instruction in anatomy, chemistry, physiology and histology during the freshman year, and in addition take dental anatomy, operative and prosthetic technics and embryology.

In the junior year work in anatomy, physiology and materia medica will be completed, and in lieu of the other studies taken by medical students the dental student receives instruction in operative and prosthetic dentistry, both practical and didactic, the time being about equally divided between the latter two subjects. He also receives instruction in dental pathology, orthodontia and elementary crown and bridge technics, together with infirmary practice. In the senior year the student devotes his entire time to the study of the practice of dentistry in all its phases; operative and prosthetic dentistry is continued, and full clinical instruction is afforded in oral surgery, the administration of anæsthetics, physical diagnosis, orthodontia and the treatment of fractures of the maxilla and cleft palate.

In this institution the dental student substitutes the practice of dentistry for that of medicine, and obtains at the end of his

course the degree of Doctor of Dental Medicine. If it is so desired, he may by attending upon lectures and passing in those studies especially pertaining to the regular medical course which have not been included in his dental curriculum, obtain the medical degree also. It is most earnestly advised that all students, who can spare the time and means, take the full course and obtain the two degrees. A much more rounded education is thereby obtained, and the possessor is better prepared for the practice of his profession.

The change in the degree from Doctor of Dental Surgery to Doctor of Dental Medicine was in response to the universal feeling expressed by the faculty and student body that it represented more nearly the position of graduates of this institution as specialists in medicine than did the old degree. We especially desire, in this connection, to call attention to the fact that while we require a thorough course in theory, we do not neglect practical work. The technical courses are very complete and the clinical facilities are unsurpassed. One special feature of the infirmary practice is that students, at all times, operate under competent instructors, the professors themselves serving as demonstrators, and every stage of each operation receives due criticism and marking. Students thus make more rapid progress with less labor than where they are turned over to undergraduates or inexperienced assistants. Every operation in this institution is a recitation and the student is thus able to trace his progress from the daily record.

This college is a member of the National Association of Dental Faculties, and its diploma is recognized in all states where the diplomas of other reputable colleges are recognized.

FEES.

Students of this college will be charged fees as follows:

Matriculation (payable annually)	$10.00
Annual dues	40.00
Material for dissection	20.00

EXPENSES BY YEARS.

FIRST YEAR:

Matriculation	$10.00
Annual dues	40.00
Qualitative analysis	10.00
Histology	10.00
Freshman technics	10.00
	$80.00

SECOND YEAR:

Matriculation	$10.00
Annual dues	40.00
Dissecting	20.00
Junior technics	10.00
	$80.00

THIRD YEAR:

Matriculation	$10.00
Annual dues	40.00
Technical courses	10.00
Diploma	10.00
	$70.00

Total for regular three year's course, no extras....$230.00

FEES FOR PRELIMINARY COURSES.

Matriculation as special students	$25.00
Tuition in Technical Course	10.00

Tuition in the Academy five dollars per term for each study.

COURSES OF INSTRUCTION.

The course in this institution has been graded since its organization, a detailed curriculum of the work in the several chairs for the ensuing year is here appended:

ANATOMY.

The course in Anatomy is graded. First year students are expected to attend all the lectures given in descriptive anatomy. First year students are given a separate course in Osteology, Syndesmology, and Myology. Examinations are held on these subjects at the close of the term. The lectures on descriptive anatomy are attended by the first and second year students. Second year students recite upon these lectures, and receive their final examination at the close the term. The lectures upon topographical and surgical anatomy are attended by the third year students, and the final examination is held at the end of the year. Dissecting is regarded as advanced work, and is done only in the second year. The practical work in the laboratory is under the supervision of the professor of anatomy and personal direction of the demonstrator The laboratory work is supplemented by lectures and recitations.

TEXT-BOOKS.—Quain, 10th Edition. Gray, 11th Edition. Holden's Practical Anatomy; Treve's Applied Anatomy; Owen's Manual.

COLLATERAL READING.—Darling and Ranney. Owen's Skeleton and Teeth. Flowers' Osteology of Mammals. McLellan's Regional Anatomy.

FIRST YEAR.—Lectures and recitations in Osteology, Syndesmology and Myology. One course; two hours per week; 64 hours. Also attendance upon lectures on descriptive anatomy; one course of two hours per week; 64 lectures.

SECOND YEAR.—Lectures and recitations in descriptive anatomy; one course of 64 lectures; laboratory work—dissection of whole body.

PHYSIOLOGY.

Students are required to study physiology, both in the first and second years. The course is partially graded. The students of both classes will hereafter attend the same series of lectures and recitations, but special teaching in advanced physiology will be given to students of the second year. The classes will be separately examined at the close of the term. The subject will be taught by recitations and by lectures illustrated by practical demonstrations.

TEXT-BOOKS.—Foster and Yeo.

COLLATERAL READING.—Chapman and Landois and Sterling.

CHEMISTRY.

FIRST YEAR.—Lectures on inorganic chemistry; laboratory—general chemistry and qualitative analysis. The student will be expected to complete his work in general chemistry and qualitative analysis, and the final examination will be held at the end of the first year.

MATERIA MEDICA AND THERAPEUTICS.

Lectures, practical demonstrations in the laboratory, and recitations; in the college of dentistry materia medica is a junior study and a final examination will be given in materia medica at the end of the year.

TEXT-BOOKS.—Brunton, Gorgas' Dental Medicine.

DENTAL THERAPEUTICS.

Senior Year.

In the course of dental therapeutics, instruction will be given by means of recitations and lectures, giving special attention to the first named. Ample opportunities are also afforded the student for putting into actual practice in the infirmary, under the careful guidance and supervision of his instructors, the principles laid down in the class-rooms. An exhaustive study of the special drugs in use in dentistry will be made, and the entire subject will be illustrated by a complete line of samples.

OPERATIVE DENTISTRY.

In this department the work is thoroughly graded. No student will be excused from any of the lectures, technics, or operations of the course, or advanced to a higher grade, until he has demonstrated his proficiency.

The infirmary is at all times under the direct supervision of either the professor of operative dentistry, or the chief of clinics, who give personal instruction and advice to each student. Undergraduates never fill positions other than those of assistants.

Freshman Year.

A course of operative technics will be conducted during this year, comprising a study of the form, size and location of pulp chambers, and canals, and the thickness of enamel; by cutting sections in different directions, and printing silhouettes; cleavage of enamel, opening and cleansing canals. Preparing and filling the several classes of cavities with gutta-percha, cement, tin, and amalgam, and canal filling, in natural teeth. Also some instruction in the nature of steel and the manufacture of instruments. This course will be sufficiently complete in all its details that a student may obtain a clear insight into methods and technique of operations.

Junior Year.

At the beginning of this year the student will enter the infirmary, where he will perform, sequentially, upon patients, the various operations of removing deposits and cleansing teeth, extracting, and filling cavities with the various filling materials.

Lectures will be given and recitations held upon the dental armament, its composition; the teeth, physical characteristics, and component parts, contact, occlusion and types. Mechanical principles, in their relation to the dental armament, to operations and instruments. Classification and preparation of cavities, cleansing and preparation of canals. Filling materials, requisites, classification, characteristics, preparation and use. The influence of form and arrangement upon decay; and the extent to which operations may modify existing forms, extraction exclusion of moisture, gaining space, pulp treatment; conservative and radical, deposits and their removal, crown and bridge work.

A course of crown techniques will be given in which the student will perform the operations, upon teeth mounted on articulators, of preparing roots for dowel-pins and crowns: Mounting porcelain crowns with and without bands: Making and mounting porcelain-faced and all gold crowns and bridge work.

At the close of the year the requisite markings upon lectures, recitations, technical and practical operations and an examination will qualify for the senior year.

Senior Year.

Lectures will be given upon all topics not already covered, pertaining to this chair, and the student will perform, in the infirmary, all of the higher grades of operations; especially those relating to and influenced by pathological conditions, also crown and bridge-work. Ample opportunity is afforded in the infirmary for putting into actual practice the principles laid down in lectures on crown and bridge-work.

As in previous years, all operations will be marked by the instructors and demonstrators, which, with the requisite markings upon recitations and final examination will constitute the final test for standing.

MECHANICAL DENTISTRY.

Freshman Year.

In the freshman year the instructions consist entirely of laboratory work. Beginning with the impression the student will be taught by practical demonstration the process of making a set of teeth, and will be required to practice until he is able to take an accurate impression of any ordinary mouth, and to carry through to completion at least two cases in vulcanite with plain teeth and gum sections, and as much further as the time will allow.

This course in technics will be sufficiently complete to give the student a thorough insight into laboratory practice and fit him, at the beginning of his junior year, to take charge of patients under the supervision of the demonstrator in charge.

Junior Year.

The didactic instruction will relate to the materials used and methods of work pursued in the laboratory. The materials will be fully considered, their sources of supply, composition, etc. The methods of work and underlying principles will be fully explained. The teeth, their characteristics, composition and adaptation to the uses for which they are intended will be considered.

The various materials used for artificial bases will be discussed and their value for the purposes intended compared.

Students will be assigned to work in the laboratory; and an abundance of clinical material is always at hand so that the fullest opportunity for the practical application of the instruction received in the lecture room and in the clinic may be had. At the close of this year the student will be expected to be able to alone take full charge of any ordinary case for vulcanite and also to have had experience in the working of metal plates.

Senior Year.

The work of this year will be a continuation of that of the previous year, applying the principles to more difficult cases.

A course in metallurgy, treating of the reduction of metals from the ores, manipulation, characteristics, etc., with fullest consideration of those metals most used in dentistry will be given the latter part of the year.

Practical instruction in the making of plate-solders, alloys, etc., will be given.

Special instruction will be given in the use of continuous gum, gold and the metallic plastics and the mechanical treatment of cleft-palate.

DENTAL ANATOMY.

Freshman Year.

The shapes and forms of the human teeth will be carefully studied in lectures and recitations from the text-book on this subject.

Students will also make sections of fully developed teeth, and study them under the microscope, and make drawings of the same. Osseous tissues will also be studied in a similar manner.

In the study of dental anatomy the teeth of the vertebrate animals, beginning with the simplest forms, as shown in the horn-like teeth of the lamprey, and the peculiarities of form, structure, methods of attachment and succession in the teeth of fish in general will be fully considered.

Next will be taken up the increasing complexity of the dental apparatus of the teeth of reptiles. The structure, and peculiarities in the manner of replacement of the teeth in the crocodilia, poisonous and non-poisonous snakes will also be presented.

The study is carried still further in the consideration of the more specialized and highly complex teeth of mammals, particularly noting the primitive patterns of the teeth of the marsupalia, the rudimentary teeth of the cetacea, edentata and sirenea, tracing specialization and complexity through the carnivora, chiropteria, insectivora, ungulata, rodentia and proboscidea, finally giving a most thorough and complete consideration of the teeth of primates.

The subject will be treated in a complete course of lectures fully illustrated by the stereopticon, together with a large collection of crania of the lower animals and man, and by lessons and recitations from the text book adopted on this subject.

ORTHODONTIA.

Senior Year.

A full course of lectures is given in which all classes of irregularities are considered and the probable causes fully discussed, together with a careful consideration of methods of treatment.

Students are taught to take impressions and make casts of cases of irregularity, and to construct all of the more important appliances and adjust them to models.

In addition to lectures and technical work special time is devoted each week, during which students are required to treat practical cases from beginning to completion under the immediate supervision of the professor of this department.

These clinics are of great interest and a large number of patients are treated annually.

EMBRYOLOGY.

Freshman Year.

A special course of twelve lectures will be given on embryology, and fully illustrates by photo-micrographs, which will be thrown on the screen by aid of the stereopticon. This course is introductory to the subjects of anatomy, physiology and histology, and will consist of a full consideration of the following subjects: A general study in the development of the chick and other embryos, the theory of reproduction, ova; spermatozoa, segmentation and the development of the three layers of the blastoderm, cellular morphology, including a comparative study in the biological cell and the nature of protoplasm, a comparative study in blood corpuscles and development of the blood, with a full consideration of the function of the third-blood corpuscle; the products of the epiblast, including the development of hair, nails, horns, hoofs, sudoriferous and sudoporus glands, and the enamel organ of the teeth.

The products of the mesoblast, showing the development of the connective tissue group, including the subject of calcification of bone, dentine and enamel—illustrative of the latter, many slides will be used in the comparative study of hard tissues, and lastly, the development of the teeth will be fully considered by aid of a full line of photo-micrographs from human, porcine and other embryos.

DENTAL PATHOLOGY.

Junior Year.

The teaching in this department will begin with a consideration of the terminology belonging to the subject, followed by a full presentation of lesions of the vascular system; inflammation, local and general; the causes that lead to decay of the teeth and nature of the process; the food and other habits of different nations in relation to the etiology of decay, also pathological dentition, Pyorrhœa alveolaris, pulpitis, pulp nodules, secondary dentine, periodontis, alveolar abscess, caries of the jaw and necrosis, dependent upon a diseased condition of the teeth. The lantern will be used frequently in illustrating these lectures.

ORAL SURGERY AND HYGIENE.

Senior Year.

The subject of oral surgery will be taught clinically and didactically. The large amount of clinical material presenting

at the infirmary, furnishes ample opportunity for practical demonstration. Students are required to take charge of cases and carry them through under the advice of the professor in charge. Anæsthetics are administered in the clinic and full instruction by thoroughly competent instructors as to the methods of examining the patients, and the use of ether and gas is given. The members of the senior class are permitted, under direction, to administer and extract under anæsthetics. The didactic lectures will include a full consideration of all the surgical lesions of the oral cavity and associate parts, including oral tumors and the reflex neuroses connected with the fifth pair of nerves; necrosis and caries, fracture of the maxillae, cleft palate and hare lip.

In the study of hygiene, personal and office, the latest modern appliances will be used, a fully equipped bacteriological laboratory having been established for this department. The importance of this step cannot be overestimated when it is understood that decay of the teeth, suppuration of the pulp and other tissues, alveolar abscess, pyorrhœa alveolaris, and perhaps other of the diseases of the teeth and associate parts with which dentists have to deal are the direct result of unhygienic conditions of the oral cavity. Full practical instruction in the process of fermentation, suppuration and infection in general will be provided. The student will be made conversant with the modes of cultivating germs and the matter of their growth; methods of disinfection and antisepsis to be used in the oral cavity. The care of instruments and the danger of infection by their use when not kept in an aseptic condition will be fully dwelt upon.

PRELIMINARY COURSE.

Optional.

The requirements for admission to the preliminary course are properly certified marks from some school or a written examination in arithmetic complete, English grammar, U. S. History to the close of the Revolutionary war. Proper substitutes for the above will be allowed.

The course is especially adapted to the needs of ladies who desire to enter the dental department and who have not had an opportunity for instruction in manual training. One of the requirements for graduation is that the candidate shall be upwards of twenty-one years of age. If the student intends to pursue a continuous course of study, he must be at least eighteen years of age when presenting for matriculation, whereas, if the preliminary course is taken he may be admitted at seventeen and begin his special training at once, instead of spending the time in an office or in desultory reading, as is often done.

The manual training part will be thorough, and will have a

direct dental tendency. In this respect it is better suited to the needs of dental students than the manual training departments of high schools. It is however, advised that the student take both, if the time and means are available.

Arrangements have been made with the Minneapolis Academy, a preparatory school for the University, situated within easy reach of the college, to give instruction in English composition, physics and algebra. A course in medical and pharmaceutical Latin is also provided in the regular course in the college of medicine and surgery. In addition to these the student may take such other studies as he can find time for. The following courses are provided:

DENTAL ANATOMY.

The shapes and forms of the human teeth will be carefully studied in lectures and recitations from the text book on this subject. (See freshman course, page 210.)

PROSTHETIC TECHNICS.

Beginning with the impression the student will be taught by practical demonstrations the process of making a set of teeth, and will be required to practice until he is able to take an accurate impression of any ordinary mouth, and to carry through to completion two cases in vulcanite, one with plain teeth and the other with gum sections.

This course in technics will be sufficiently complete to give the student a thorough insight into laboratory practice and fit him, at the end of the year, to take charge of patients under the supervision of the demonstrator in charge.

REGISTRATION.

Registration and entrance examination for the preliminary course will be held in the Academy building, corner of Harvard and Delaware streets southeast, on the Interurban line, at 9:00 A. M., September 4th, 1893. Students are urged to be present at the opening of the session, although they may enter at any time up to January. The course in prosthetic technics begins in the medical college building October 18, 1893.

LABORATORIES.

Many of the laboratory courses are held in the afternoon. These are also open to preliminary and University students who may anticipate the regular work without interfering with their studies.

CLINICAL INSTRUCTION.

Clinical instruction will embrace all practical subjects relating to dentistry.

The large amount of clinical material presenting at the infirmary, furnishes ample opportunity for practical demonstration. Students are required to take charge of cases and carry them through under the advice of the professor in charge. Anæsthetics are administered in the clinic and full instruction in the use of ether and gas is given. The members of the senior class are permitted, under direction, to administer and extract under anæsthesia.

The Infirmary and Mechanical Laboratory will be opened September 4th, at which time students may enter and make up conditions or do advanced work that will be counted on the regular term work.

INSTRUMENTS.

Students will be required to furnish their own tools and instruments for both laboratory and operating room, except extracting instruments, lathes, furnaces, and vulcanizers. Also a suitable case in which to keep them.

ADMISSION.

Applicants are required to pass examinations as follows:

(1) English composition; by writing a composition of not less than two hundred words.

(2) The elements of Latin grammar—including the translation of easy Latin prose.

(3) The elements of algebra.

(4) The elements of physics.

GRADUATION.

The degree of Doctor of Dental Medicine will be conferred upon those who possess the following qualifications:

(1) They must be at least twenty-one years of age; (2) of good moral character; (3) they must have spent three full years in the study of dentistry and attended three full courses of lectures, of which at least the last must have been spent in this college, and the first two years in this or some other recognized college of dentistry; (4) They must have sustained satisfactory examinations in the various branches of study required for graduation.

TEXT-BOOKS.

First Year—Quain's Anatomy; Foster's Physiology; Remsen's Chemistry; Brunton's Materia Medica; Guernsey's Key Notes; Black's Dental Anatomy; American System of Dentistry; Gorgas' Dental Medicine. These may be obtained at the University book store.

Collateral Reading—Haskell's Manual; Garretson's Oral Surgery; Guilford's Orthodontia; Stanton's Physiognomy.

The infirmary will be opened September 4th. Students conditioned in practical work, as well as any others that may desire, can enter at this time and make up such conditions. All such work done during September will count on the regular term work.

FALL QUIZ.

Daily quizzes in anatomy, chemistry, histology, chemistry and materia medica will be held during the month of September with the view of preparing students for the conditioned examinations the second week in October.

EXAMINATIONS.

Examinations will be held at the end of each year, in the studies of that year, for advancement to the next grade.

Students who fail to pass at the regular examination in the spring, will be allowed an examination at the opening of the next winter's session, except in the case of candidates for graduation.

Two entrance examinations are held annually, the Saturday preceding commencement and the first week of the year. The next regular entrance examination will be held October 10th at 10 a. m. in medical hall on the campus.

Announcements will be furnished upon application to W. X. Sudduth, Dean, 1206 Fourth street southeast, Minneapolis, Minn.

THE COLLEGE OF PHARMACY.

THE FACULTY.

CYRUS NORTHROP, LL. D . *President.*
FREDERICK J. WULLING, PH. G., *Dean and Professor of the Theory and Practice of Pharmacy, and Pharmaceutical Chemistry.*
H. M. BRACKEN, M. D., *Professor of Materia Medica.*
C. J. BELL, A. M., *Professor of Chemistry.*
CONWAY MACMILLAN, A. M., *Professor of Botany.*
RICHARD O. BEARD, M. D., *Professor of Physiology.*
JAMES A. DODGE, PH. D., *Professor of Organic Chemistry.*
H. L. STAPLES. A. M., M. D., *Instructor in Medical and Pharmaceutical Latin.*

ANNOUNCEMENT.

In the organization of this college the Board of Regents have aimed to secure the co-operation of the pharmacists of the state. The character of instruction will be of high order and every effort will be made to comply with the demands of the profession in the northwest in the maintenance of a course of instruction of high grade. The college appeals to the pharmacists of the northwest for the support so necessary to ensure success. The college is located on the University campus, in the new building, and is one of the colleges of the Department of Medicine; the faculty participate in the faculty meetings of the department. The new buildings and laboratories are on a par with those of the best in this country and their equipment adequate.

The chief aim is to educate students to become pharmacists; to cause them to become thoroughly versed and competent for the intelligent discharge of the duties incumbent on a dispensing pharmacist. Botany, materia medica, chemistry, pharmacognosy and physiology will be taught, and enough of each to make pharmacy comprehensive.

COURSES OF INSTRUCTION.

CHEMISTRY.

In the presentation of this subject practical work will follow the lectures and relate to the subjects treated of in the lectures. The professor in charge gives his personal attention to the practical laboratory work. The system is one which gives the stu-

dent confidence in his work from the beginning. The course will include inorganic chemistry, and the practical work necessary for the thorough and complete understanding of as much as the lectures embrace. Qualitative and quantitative analysis and organic chemistry will be considered.

TEXT-BOOKS RECOMMENDED.—Remsen's Inorganic Chemistry, Reese's Toxicology, Taylor on Poisons, etc.

PHARMACEUTICAL CHEMISTRY.

Pharmaceutical chemistry is the application of the principles of chemistry to pharmacy. It is an important part of the curriculum, and will receive ample attention both in special lectures and in the pharmaceutical laboratory. Inorganic chemistry is taught both in the junior and senior years; organic chemistry in the senior only.

ORGANIC CHEMISTRY.

This subject demands a large amount of the time of students in their senior year. In the first part of the year, the principles of general organic chemistry will be taught; in the latter part of the year special attention will be given to the practical application of the subject to pharmacy.

BOTANY.

The course in botany will receive the attention due to a subject so important to the pharmacist. The laboratories of the University are well equipped for the presentation of this subject in a scientific and most thorough manner.

TEXT-BOOKS.—Gray's Botanical Text-Book (6th edition), Gray's Manual of the Botany of the Northern United States, etc.

MATERIA MEDICA.

In the presentation of the subject of materia medica, the "object lesson" method will be followed. The didactic instruction is followed by the study of specimens which illustrate the subject of the lectures.

TEXT-BOOKS.—Brunton, Wood and Bartholow, etc.

PHARMACEUTICAL MATHEMATICS.

In this subject, which has been hitherto very much neglected in most colleges of pharmacy, the student will receive careful drill.

ELEMENTARY PHYSIOLOGY AND ANATOMY.

This subject is taught to the juniors in the latter part of the junior year in a special course of lectures. The study of the action of drugs and their effect upon the system cannot be intelligently carried on without some knowledge of the structure and functions of the various organs.

PHARMACY, THEORETICAL AND PRACTICAL.

Junior Course.

The junior course will begin with preliminary lectures considering the history and development of pharmacy; the rank which pharmacy occupies among other professions; pharmacy laws, text-books, and works of reference. The pharmacopæia and dispensatory will receive detailed attention. Measures and weights; the balance, its construction and varieties, and methods of weighing; specific gravity, in detail, will follow.

The pharmaceutical laboratory will be under the direct charge of the dean. The time of instruction is so arranged that the student becomes familiar with the subjects of the lectures from practical work immediately following and relating to it, thereby fixing facts and scientific principles in the student's mind in a manner that does not depend upon the student's capacity for remembering merely stated facts. A student can better remember that which he did than that which he heard.

Among the subjects that will receive attention, are the following: drug grinding and powdering, comminution, contusion, trituration, elutriation, levigation, sifting fineness of powders according to the United States Pharmacopæia shown with apparatus. Collection of drugs, drying, curing, cutting, garbling, etc.

Heat—its sources and uses in pharmacy; its determination; latent and sensible heat; thermometers—the various scales, testing and comparing thermometers; combustion of solids, liquids and gases, in various kinds of furnaces, stoves and burners; application of heat in drying ovens, steam, hot-air and water ovens; drying closets, desiccators, blow-pipe, crucibles, baths for controlling and equallizing heat; water, salt, sand, oil, glycerine, parafine, hot-air-baths; evaporation—spontaneous, rapid, slow, in vacuo; ebullition, boiling-points. Fusion, sublimation, calcination, granulation, dehydration, torrefaction, roasting, reduction, oxidation, carbonization, deflagration, ignition, etc.

Solutions; chemical, pharmaceutical, simple, complex, saturated, circulatory displacement.

Dialysis; construction of dialyser, osmosis, endosmosis, exosmosis, creptalloids and colloids.

Maceration; expression, infusion, decoction.

Percolation; history, theories, various methods, forms of percolators, exhaustion, repercolation, continuous percolation, etc.

Filtration; filtering media, filtrations of chemical solutions, oils, syrups, rapid filtration, filtration in vacuo, hot filtration, upward filtration, colation.

Decantation; the syphon and its uses; grinding rods.

Distillation; simple, fractional, destructive, kinds and varieties of stills.

Crystallization; water of crystallization, deliquescence, efflorescence.

Granulation; methods of effecting, etc.

Precipitation; separating, weighing, drying precipitate.

Practical pharmacy.

Inorganic, U. S. P.

Senior Course.

This course will begin with the consideration, in detail, of the pharmacy, principally of organic drugs, though the inorganic will not be wholly omitted. It will embrace a careful study of every important galenical preparation, with the methods of preparation, physical characteristics, reactions, impurities, adulterations and sophistications, etc.

A study of incompatibility will be one of the special features of this course; it will be viewed from a pharmaceutical, chemical and physiological standpoint.

Among the important subjects that will be treated of are the following:

PLANT EXUDATIONS: Gums, resins, balsams, gum-resins, oleo-resins, etc.

CELLULIN and its various products.

DESTRUCTIVE DISTILLATION OF WOOD: Acetic acid series.

CARBOHYDRATES: Their relationship and characteristics.

FERMENTATION PRODUCTS: Alcohols, ethers, chloroform, nitrous ether, chloral, spirituous liquors, etc.

ORGANIC ACIDS: The official salts and preparations of tartaric, salicylic, benzoic, citric acid and others.

FIXED OILS AND FATS: Their preparation, composition and purification; various methods of examination; chemical properties and relations; liquid and solid fats.

WAXES AND ANIMAL FATS.

VOLATILE OILS: Their preparation, physical and chemical properties; composition; adulterations and their detection; botanical and chemical classification.

ALKALOIDS: Physical and chemical properties; the various methods of extraction and identification; classification; alkaloidal reagents, etc.

GLUCOSIDES: Difference from alkaloids; full consideration of properties.

ANIMAL DRUGS AND PRODUCTS: All the animal drugs will be taken up in detail.

PRACTICAL PHARMACY: The preparation of pills, solutions, mixtures, cachets, ointments, plasters, suppositories, powders,

emulsions, lozenges, etc. Arrangement and appliances of dispensing department.

THE PRESCRIPTION: The study of the prescription, of incompatibilities, reactions, solubility, etc. New remedies will be studied and an exposition of their chemistry and pharacy will be presented.

The laboratory work in pharmacy will follow each lecture and have direct reference to the subjects treated of at the lecture. The preparation of the official standard solutions will be fully illustrated. The course will conclude with a thorough study of the pharmacy of the metals and their salts and preparations. Among the principal are: Sodium, potassium, ammonium, lithium, barium, calcium, zinc, magnesium, lead, copper, aluminum, mercury, silver, arsenic and antimony, bismuth, iron, manganese, gold, platinum, etc.

PHARMACOGNOSY.

The identification and examination of vegetable drugs requires not only a knowledge of the external appearance and physical properties, but also of the chemical composition as well.

This subject will be taught to the senior class in the following order:

ROOTS.—Sarsaparilla (Mexican, Para and Honduras), Senega, Saponaria, Gentiana, Frasera; Taraxacum, Chicory, Pyrethrum, Inula, Lappa, Apoconum, Stillingia, Agelica, Petroselinum, Sumbul Asclepias, Phytelacca, Althæa, Belladonda; Bryonia, Calumba, Rheum, Glycyrrhizza (Spanish and Russian), Hydrangea, Methysticum, Ipecacuanha, Gillenia, Gelsemium, Pareira, Ceanothus, Krameria.

RHIZOMES.—Aspidium, Zingiber (Jamaica, East Indian and African), Zedoaria, Galanga, Curcuma, Calamus, Veratrum, Iris versicolor, Cypripedium, Convallaria, Sanguinaria, Dioscorea, Geranium, Tormentilla, Podophyllum; Valeriana, Arnica, Serpentaria, Spigelia, Hydrastis, Caulophyllum; Cimicifuga, Leptandra; Menispermum, Berberis, Zanthorrhiza.

TUBERS AND BULBS.—Jalapa, Aconitum, Colchium, Arum, Scilla.

WOODS.—Quassia, Hærmatoxylon, Santalum Rubrum and Album.

BARKS.—Cinchona (Rubra and Flava), Magnolia, Prunus Virginiana, Viburnum, Hamamelis, Berberis, Quercus, Granatum; Frangula, Cascara, Sagrada (false and true), Quebracho, Juglans, Zanthoxylum, Mezereum, Gossypii Radix, Euonymous; Quillaia, Ulmas, Sassafras, Angustura, Cascarilla, Cinnamomum, Wintera.

HERBS AND FLOWERS.—Santonica, Caryophyllus, Lavandula, Sambucus, Calendula, Carthamus, Arnica, Matricaria, Anthemis,

Pyrethri Flores, Brayera, Chondrus, Cetraria, Fucus, Cannabis Indica, Pulsatilla, Scoparius, Eupatorium, Erigeron, Grindelia, Tanacetum, Artemisia, Absinthium, Lobelia, Mentha Piperita, Mentha Viridis, Melissa, Majoranum, Origanum, Thymus, Hedeoma, Marrubium, Cataria.

LEAVES AND LEAFLETS.—Rosmarinus, Boldus, Pilocarpus, Laurus, Myrcia, Encalyptus, Chequen, Uva-Ursi, Senna (Alexandria and India), Erythroxylon, Belladonna, Stramonium, Hyoscyamus, Digitalis, Matico, Salvia, Hamamelis, Castanea, Tussilago, Chimaphila, Gaultheria, Buchu (long and short), Aconitum, Conium.

FRUITS.—Juniperus, Humulus, Piper (Longum, Nigrum and Album), Cubeba, Pimenta, Rhamus Catharticus, Cocculus, Rhus glabra; Capsicum, Colocynth, Cassia Fistula, Chenopodium, Xanthoxdium, Illicium, Cardamomum, Lappa, Silybum, Granati Fructus Cortex, Coriandrum; Conium, Ansium, Ajowan, Petroselinum, Carum, Carota, Fœniculum, Cuminum, Anethum.

SEEDS.—Physotigma, Amygdalus (Dulcis and Amara), Pepo, Dipterix, Theobroma, Cola, Abrus Fœnum Grœcum, Rapa, Sinapis (Alba and Nigra); Nux Vomica, Ignatia, Gynocardia, Delphinium, Staphisagria, Ricinus, Tiglium, Curcas, Stramonium, Hyoscyamus, Papaver, Sabadilla, Colchicum, Cardamomum, Granum, Paradisi, Areca.

MISCELLANEOUS.—Guarana, Lactucarium, Aloe (Socotrina, Barbadense and Capensis), Catechu, Gambir, Kino (Malabar and Pallas), Saccharum Lactis, Acacia, Tragacantha; Mastiche, Sandaraca, Colophonium, Damar, Copal, Guiacum, Draconis, Benzoimum, Cambogia, Galbanum, Ammoniacum; Scammonium, Myrrha, Ergota, Sassafras, Medulla, Galla (Allepo and Chinensis, Cantharis, Mylabris; Kamala, Lupulinum, Lycopodium, Amylum (Wheat, Corn, Maranta and Potato).

TEXT BOOKS.—U. S. Pharmacopœia, Remington's Pharmacy, U. S. Dispensatory, National Dispensatory, etc.

ADMISSION.

The qualifications for admission to this college are the same as for the other colleges of the Department of Medicine, and are as follows:

(1) An English composition of not less than two hundred words.

(2) The translation of easy Latin prose and the elements of Latin grammar.

(3) The elements of algebra.

(4) The elements of physics.

EXAMINATIONS.

Examinations are held the last two weeks of the regular session. They are supplementary to the recitation exercises of the entire session, and with them form the basis of final determination of fitness for promotion or graduation. An examination is held the first week of the session for conditioned students.

REQUIREMENTS FOR ALL STUDENTS.

Regular attendance at lectures, quizzes and laboratory exercises. Students will not be permitted to present themselves for final examination unless they have been in attendance upon at least three-fourths of the required number of exercises.

Before presenting himself for graduation a student must have attended two full lecture and laboratory courses, the last at this college; he must have passed a successful examination; he must furnish satisfactory evidence of his having served at least four years in a dispensing pharmacy. Students who have not had four year's practical experience in a dispensing pharmacy at the time they wish to present themselves for graduation, may pass the final examination, but their diploma will be withheld until they shall have served four years. Those who fail to appear for examination, after having paid their examination fee, or those who do not pass satisfactorily, will be permitted to present themselves at any subsequent examination, upon paying an additional fee of five dollars and complying with all other requirements.

GRADUATION.

Every person upon whom the degree of Graduate in Pharmacy is conferred must be of good moral character and must have complied with all the above requirements.

The diploma will not be conferred upon any one who has not attained to age of twenty-one years, and who has not had fully four years' practical experience with a person qualified to conduct the business of a dispensing pharmacy. The four years may include the time spent in college; but attendance in the laboratories will not be accepted in place of actual experience in a dispensing pharmacy. If a student has not had the requisite amount of experience, or has not attained the age of twenty-one years, a certificate of examination will be issued to him, if he passes all examinations satisfactorily, this certificate may subsequently be exchanged for a diploma when all necessary conditions shall have been fulfilled.

FEES.

Matriculation fee (yearly),	$10
Annual dues,	40
Qualitative analysis (seniors only),	10
Pharmaceutical laboratory,	15
Diploma fee,	10

Students who do not intend to graduate, or who wish to take only certain special courses, will be required to pay a fee of $25.

GENERAL REMARKS.

A deposit of ten dollars with the Registrar of the college will be required to cover all breakage, damage or waste in the chemical or pharmaceutical laboratories. No places will be assigned to students who fail to comply with this rule. The deposit will be returned at the the end of the term minus the cost of any breakage, waste or damage. If at any time the breakage, etc., exceeds the specified amount a new deposit will be required.

The junior examinations cover all branches taught in the junior year. Those students who fail to pass the examinations will be allowed to undergo a supplementary examination the following fall. If they pass satisfactorily then, they will be promoted to the senior class, if not, they will be obliged to attend a full junior course. Seniors who have complied with all necessary requirements, but fail in one or two studies, will be required to pass in those only, at the next examination, when they will be entitled to their diplomas. Seniors are also privileged to defer their examination in pharmacy until the third year.

Students will be permitted to bring crude drugs, from store where they are employed, for the making of preparations, provided such material is approved by the director of the parmaceutical laboratory, as suitable to demonstrate the lessons in hand. Finished products from such material, if of satisfactory quality, are at the disposal of the student, except such as have been prepared with tax-free alcohol belonging to the college.

Students who have attended two full courses, but have not graduated, will be entitled to attend, without further charge, the lectures of subsequent courses, but not the laboratory work and quizzes, unless they pay the requisite fees therefor.

Address all communications to Frederick J. Wulling, Ph. G., Dean, Minneapolis, Minn. The dean's office house are Tuesdays and Fridays from 2 to 4 o'clock and Thursdays from 10 to 11:30, in the laboratory building.

General Information.

THE UNIVERSITY YEAR.

The University year embraces thirty-eight weeks, beginning on the Tuesday before the first Thursday in September, and is divided into three terms. The first term has thirteen, the second twelve, and the third thirteen weeks. Commencement day comes on the first Thursday in June. See calendar, pages four and five.

STUDENTS' SOCIETIES.

RELIGIOUS.

The STUDENTS' CHRISTIAN ASSOCIATION was organized by the students and faculty of the University in 1869; its object being, as stated in the constitution, to promote growth in christian character, and to engage in such religious work as may be deemed expedient and necessary.

The association owns a commodious building, which is used for various purposes; it provides a course of lectures and holds a prayer meeting once a week. The association has a committee to help students to find comfortable rooms and boarding places. Students will be more apt to secure rooms as they desire them if they send word to the committee before coming to the University telling them of the price they wish to pay. The association is meant to be the rallying point of all christians in college. All persons in sympathy with the object of the association are eligible to membership. Address inquiries in regard to boarding places to Mr. C. B. Miller, chairman of the S. C. A. boarding committee, care of the University.

The YOUNG MEN'S CHRISTIAN ASSOCIATION has as its object the promotion of "growth in grace and christian fellowship among its members, and aggressive christian work, by and for students." The active membership is composed of members of good standing in evangelical churches; and any young man of good moral character may become an associate member.

On the first Saturday evening of the college year, the association, in union with the Young Women's Christian Association, holds a general reception for all students; on Washington's

birthday a reception is given to the freshman class, and various other informal receptions are held during the year.

A *Students' Hand-Book*, containing items of information, especially valuable for new students, is issued at the beginning of the college year. A copy will be sent free to any address. Apply to J. G. Briggs, president of the Young Men's Christian Association.

Religious meetings are held every Sunday afternoon; there are also devotional meeting during the week.

THE YOUNG WOMEN'S CHRISTAIN ASSOCIATION.—The object of this association is "the development of christian character in its members, and the prosecution of active christian work, among the young ladies of the University." The active membership consists of students and professors of the University, who are members of an evangelical church; and any other lady students or professors may become associate members.

The association holds regular weekly prayer-meetings; also has two organized Bible training classes, which meet one hour each week for Bible study.

The association unites with the Young Men's Christian Association in giving various receptions and in publishing a *Hand-Book* for new students. Copies of this hand-book will be furnished free to any person desiring the same. Address, Miss Mary Felton, president of the Young Women's Christian Association.

LITERARY SOCIETIES.

There are two literary societies, meeting every Monday evening during the school year; these societies furnish excellent opportunity for practice in extemporaneous speaking and parliamentary procedure. Beside these two societies, which are open to all students, several of the college classes have debating clubs of a similar nature.

ATHLETICS.

THE ATHLETIC ASSOCIATION is an organization, having for its object the general physical culture for the students, and the encouragement of a proper spirit in favor of hearty, manly sports. The Monday before Commencement is the annual field day of the associon.

ALUMNI SOCIETIES.

ALUMNI ASSOCIATION.

This association was organized in 1875. The graduates of the several colleges of the University are members; the members of the Board of Regents and the general faculty are honorary members. The annual meeting is on the day preceding commencement, at 2 o'clock p. m. The Alumni dine together after the pub-

lic exercises on commencement day. Judge Stephen Mahony, '77, is president of the association.

FELLOWSHIP ASSOCIATION.

This association was incorporated March 10, 1888. Its object is to encourage graduate students in special lines of study and for that purpose to raise a fund by endowment gift, grant, bequest, or annual contribution of its members.

Alumni, former students and other friends of the University, become members of the association by pledging financial support of not less than five dollars annually for five years. Life membership certificates are issued upon payment of $100. The annual meeting is held at the University during the forenoon of the day preceding Commencement. C. J. Rockwood is president of the association.

SCHOLARSHIPS.

It is the policy of the University to establish scholarships in the different departments where extra help is needed for instruction under regulations somewhat as follows:

1. The appointments are made by the Executive Committee of the Board of Regents, upon the recommendation of the department in which the appointment is desired.

2. The Executive Committee has power to declare a scholarship vacant at any time; and may or may not elect a new appointee to the place made vacant.

3. Recipients of scholarships may be either graduate or undergraduate students.

4. The scholarships are not intended as gifts or benefactions from the State to the recipients, but as provisions under which services may be rendered the University.

5. The holder of a scholarship is expected to render such services as he may show a special aptitude for, and are contemplated at the time of his appointment. It is understood, however, that these services are of a nature which shall assist the holder of a scholarship to attain to a mastery of some line of work in the department to which he is appointed.

6. The scholarships may be suspended or increased in any department as the need for services and the amount of work may vary.

PRIZES.

THE PILLSBURY PRIZES.

Three prizes of $30, $25 and $20, offered by the Hon. J. S. Pillsbury, will be awarded every year for the best work in the Rhetorical department, as evidenced finally by an oration in public.

THE '89 MEMORIAL PRIZE.

A prize of twenty-five dollars, known as the "'89 Memorial Prize," established by the class of 1889, is given for the best work done in the historical department, as evidenced by a thesis.

THE MOSES MARSTON SCHOLARSHIP IN ENGLISH.

Some of the friends and pupils of the late Professor Moses Marston, Ph. D., have given and pledged one thousand dollars as a memorial fund. The annual income of the fund is to be used to help some student in the long English course. The award of the income is made on the basis of pecuniary need and of deserving scholarship.

THE GILLETTE-HERZOG PRIZES.

The Gillette-Herzog Manufacturing Company offer for competition, by the students of the college of Engineering, Metallurgy and the Mechanic Arts, two annual prizes, viz:

A first cash prize of fifty dollars accompanied by a gold medal.

A second cash prize of thirty dollars accompanied by a gold medal.

The subjects admitted to competition are:

1. Mechanical Engineering.
2. Architecture and Structural Engineering.
3. Civil Engineering.
4. Electrical Engineering.

PUBLICATIONS.

THE QUARTERLY BULLETIN.

The Quarterly Bulletin is an official publication devoted to University news and the publishing of synopses of papers on original investigations carried on by professors, alumni and students.

THE ARIEL.

The Ariel Association is an association formed by the students of the University. A board of editors is elected annually, who publish a weekly paper called the Ariel. This paper holds a very high rank among similar papers published in the colleges of the country.

THE JUNIOR ANNUAL.

The Junior Annual is a book published annually by the junior class of the University. The book represents the students' side of college life. Copies may be had by addressing the Business Manager of the Junior Annual, care of the University.

THE YEAR BOOK OF THE SOCIETY OF ENGINEERS.

This book is published yearly by the society of engineering students. It is devoted to the publication of articles upon engineering subjects, by professors and students in the college of Engineering, Metallurgy and the Mechanic Arts.

EXPENSES.

In past years several students have kept careful account of their expenses for the University year. The following is a detailed report of the result:

STUDENT ONE had all his expenses paid by his parents; the following is a statement of his expenses:

Board, 35 weeks @ $3.50 (this leaves out of account a vacation of three weeks spent at home)	$ 122.50
Room, nine months @ $5.50	49.50
Text books	22.75
Street care fare	4.85
Railroad fare, six trips home	7.44
Clothing	62.50
Laundry	21.35
Sundries	22.65
Total for the year	$ 313.54

Ten dollars of this amount was earned by the young man by working in a store during a part of the Christmas holidays; this amount was spent for Christmas presents for friends and is put down in the above list as sundries.

STUDENT TWO earned everything that he spent during the year. He began school in the fall with fifty dollars in the bank; at the end of the year he had ten dollars in the bank. He earned his money by work as a printer. The following is a statement of his expenses:

Board and room	$ 160.00
Laundry	15.00
Medical attendance	20.00
Clothing	50.00
Books	30.00
Incidentials (this includes street car fare, railroad fare, etc.)	30.00
Total for the year	$ 305 00

STUDENT THREE worked for his table board, his parents paying most of his other expenses. The following is a statement of his expenses:

Board, 38 weeks @ $3.75	$ 142.50
Room	34.68
Laundry	10.49
Books	18.39
Railroad fare and express	8.53
Street car fare	8.45
Clothing	26.29
Sundries	19.50
Total for the year	$ 268.83
Received from parents	96.33
Earned himself	$ 172.50

STUDENT FOUR, a member of the senior class, paid expenses as follows:

Board, room, laundry and fraternity dues (39 weeks)	$208.75
Clothing,	74.25
Class dues,	8.25
Books,	29.10
Stamps,	3.41
Church, donations and amusements,	24.90
Railroad fare,	16.25
Street car fare,	4.95
Paid the barber,	14.20
Incidentals,	13.03
Total,	$397.09

Of this amount he earned all but $125.00 by working in an office. This student roomed and boarded at a fraternity house, and his statement concerning board and room, etc., cannot very well be divided up with accuracy, so they are given in a lump. This statement includes all expenses incident to graduation and commencement week.

In the foregoing cases the students were allowed their incidental fee of $5, for keeping their accounts for this purpose.

These students are fairly representative students; they are neither extravagant nor did they deny themselves unduly to get along. Board could have been obtained in clubs at from fifty to seventy-five cents per week cheaper than any of them paid.

Student number two is a skillful printer and thus easily found work at more remunerative wages than the ordinary student can obtain. The student who learns some trade before coming to the University has a great advantage over the student who has to earn his money by ordinary manual labor.

Students have earned their whole expenses while attending the University by taking care of lawns, furnaces, horses, etc., and have made good records at the same time. Other students have done so much of this work that they have not been able to keep up with their studies, and have thus missed the one thing for which they were attending the University.

If it is possible for the student to have a part of his expenses paid, he should not attempt to earn his way, entirely by his own exertions. It is a comparatively easy thing for a young man to earn half his living while attending the University and yet do good work in his classes.

Student number two, although he earned his entire expenses, was one of the best students in the sophomore class. Student number three was a freshman and a good student; he paid for his board by waiting on the table at the W. C. T. U. coffee house in this city.

Students who want work seldom fail to find it. In coming to the University, if the student contemplates earning his way, in whole or in part, he should bring enough money with him so that he can live comfortably for a few weeks until he can find something to do.

EXPENSES OF YOUNG WOMEN.

The following is a record of one of two sisters who kept house during their sophomore year:

Rent	$ 40.75
Board, light, laundry	52.42
Fuel	7.25
Railroad fare and cartage	27.80
Street car fare	5.85
Stationery	3.97
Amusements and presents	10.56
Personals and clothing	72.51
Incidentals	18.94
Total expenses	$ 240 05

Students.

I. GRADUATE STUDENTS.

Candidates for the Degree of Doctor of Philosophy—17.

Babcock, Kendrick Charles, *B. L., '89.* Minneapolis.
Chamberlain, Rev. James A., *B. D., Beloit College.*
Crafts, Leo M., *B. L. '86; M. D., '90, Harvard.* Minneapolis.
Experimental Pyschology, History of Philosophy, Criminology.
*Crombie, John S., *B. A. '76, Univ. of Michigan.* Brooklyn, N. Y.
Hadden, Rev. Archibald, *B. D., '80, Yale.* Muskegan, Mich.
Kennedy, Joseph, *B. S., '86.* University, N. D.
Political Science and History.
Leatherman, Rev. Robert Lee, *B. A., '88, Roanoke College,*
History of Philosophy, Psychology, Ethics.
Lhamon, Rev. W. J., *M. A., '80, Butler University.* Minneapolis.
History.
Lund, Rev. E. G., *B. A. '77, Thiel College.* Minneapolis.
Ethics, Psychology, Logic.
Magnusson, Peter M., *B. A., '90, Gustavus Adolphus.*
Psychology, History of Philosophy, Ethics. Minneapolis.
Medlar, Rev. W. H., *B. D., '85, Yale.* Minneapolis.
History.
Merrill, John Ernest, *B. A., '91.* Minneapolis.
Ethics, Psychology, Metaphysics.
Sanford, John A., *B. A., '82, Brown College.* Minneapolis.
Greek.
Sardeson, Frederick William, *B. L., 91; M. S., 92.* Minneapolis.
Paleontology, Geology, Zoology, Botany.
Sudduth, W. Xavier, *M. D.; D. D. S.; M. A., Illinois Wesleyan University.*
Zoology, Botany, Physiology, Paleontology.
Vandyke, J. A., Wabasha.
History.
Zeleny, John, *B. S., '92.* Minneapolis.
Physics, Chemistry, Mineralogy, Geology.

Candidates for the Degree of Master of Arts—11.

—Bailey, Clara Edith, B. A. '92. Minneapolis.
Greek, Latin, French, Mathematics.
Bryant, Julius Cullen, *B. A., '78.* St. Paul.
History, Latin,
Conant, C. Everett, *B. A., '92, Lawrence University.* Minneapolis.
Sanskrit, Scandinavian.
—Friedlander, Esther, *B. A., '92.* Minneapolis.
Greek, Latin, Chemistry, Political Science.
Hult, Gottfrid Emanuel, *B. A., '92.* Minneapolis.
English Literature, Greek, Psychology, French.
—McNamara, Jeanette. St. Paul.
History.
Nelson, Andrew, *B. A., '92.* Minneapolis.
Mathematics, Psychology, Greek.
—Sanford, Mrs. A. Minneapolis.
History.
Trask, John J., *B, A., '91, University of N. D.* Minneapolis.
Mathematics, Physics, Latin.
Triggs, Oscar Lovell, *B. A., '89.* Chicago, Ill.
English Literature, Greek, Latin, Aesthetics.
Webster, William Franklin, *B. A., '86.* Moorhead.
Latin, French, Greek, Italian.

*Died April 16, 1893.

Candidates for the Degree of Master of Science--8.

Avery, L. B., *B. S., '83, Tabor College.* St. Cloud.
Chemistry, Mineralogy, Physics, Geology.
Berkey, Charles Peter, *B. S., '92.* Farmington.
Mineralogy, Chemistry, Geology, German.
Elftman, Arthur Hugo, *B. L., '92.* Minneapolis.
Lithology, Mineralogy, Paleontology, Chemistry.
Grant, Ulysses Sherman, *B. S. '88.* Minneapolis.
Lithology, Mineralogy, Animal Biology, Paleontology.
Hortvet, Julius, *B. S., University of Wisconsin.* Minneapolis.
Meeds, Alonzo Draper, *B. S., '89.* Minneapolis.
Schmidt, Charles Christian, *B. S. '84.* Lakeview.
German, Botany, Physiology, Science of Government.
Zeleny, Anthony, *B. S., '92.* Minneapolis.
Physics, Mathematics, Chemistry, Geology.

Candidates for the Degree of Master of Literature--2.

—Robinson, Louise F., *B. L., '92.* Minneapolis.
History.
Rutherford, William Henry A., *B. L., '90.* Minneapolis.
English, International Law, Psychology, French.

Candidate for the Degree of Mechanical Engineering--1.

Gill, James Herbert, *B. M. E., '92.* Minneapolis.
Mechanical Engineering, Chemistry, Physics.

Candidates for the Degree of Master of Laws--7.

Bebb, William Bennett, *LL. B., '92.* Minneapolis,
Benson, Charles Stuart, *LL. B., '92.* St. Paul.
Burr, Stiles Wilton. *LL. B., '92.* St. Paul.
Chute, Louis Prince, *A. B., LL. B., Notre Dame.* Minneapolis.
Hintermeister, John Henry, *LL. B., '92.* St. Paul.
See, John Weldon, *LL. M., Univ. of Mich.* Minneapolis.
Taylor, Carl, *LL. B., '92.* St. Paul.

Others Doing Graduate Work--42.

—Anderson, Martha, *Ohio Wesleyan University,*
—Andrews, Hattie Louise, *B. A., '90.* Minneapolis.
—Ankeny, Martha Virginia, *B. L., '91.* Minneapolis.
Beauparlant, J. H. A., *St. Hyacinthe, (Quebec).* Minneapolis.
—Bebb, Rose Anne, *B. L., '91.* Minneapolis.
Bovey, Charles C., *Yale.*
Brewster, Henry Webb, *B. A. '87, Ph. D. '92.* St. Anthony Park
Brohough, Gustav O., *B. L., '89.* Red Wing.
Chapple, Charles Loran, *B. L., '92.* Almond, Wis.
—Clark, Alta Keith, *B. S., '90, Hamline.* Hamline.
Clow, Frederick Redman, *A. B., '91; M. A. '92, Harvard.* Minneapolis.
—Comfort, Sarah Catharine, *B. L., '90.* Minneapolis.
Cox, U. O. Mankato.
—Crafts, Lettie May, *B. L, '81.* Minneapolis.
—Cross, Nellie Malura, *B. L. '91.* Minneapolis.
Danner, Harry R., *B. A., '91, Rutgers.* Minneapolis.
—Firkins, Ina, *B. L., '88.* Minneapolis.
Firkins, Oscar, *B. A. '84.* Minneapolis.
—Grimes, Emma E., *B. L., '81.* Minneapolis.
Hayward, Rev. J. H. Heyward, Wis.
Head, George Douglas, *B. S., '92.* Minneapolis.
—Hippe, Louise, *B. A., '87, Thiel College.* Minneapolis.
Herron, Clark T., *Ph. B., Hillsdale College, '85.* Minneapolis.
—Leavenworth, Mrs. F. P., *B. A., '81, Indiana Univ.* Minneapolis.
Lundholm, Carl Frithiof, *University of Upsala.* St. Paul.
—Martin, Lillie May, *B. L., '91.* Minneapolis,
—Montgomery, Louise *B. S., '90.* Pasadena, Cal.
—Norton, Ellen A., *B. L., '83, Carlton.* Northfield.
Pike, Joseph Brown, *B. A., '90; M. A., '91.* Minneapolis.
Ranum, Arthur, *B. A., '92.* St. Thomas, N. D.
Reed, Albert Irving, *B. C. E., '85.* Hastings.
Robertson, William, *B. S., 85, Carleton College.* St. Anthony Park
—Rose, Florence Julia, *B. L., '92.* Minneapolis.
—Sammis, Eveline VanWinkle, *B. L., '92.* Minneapolis.
—Shillock, Anna, *B. L., '88.* Minneapolis.
Schneider, Albert, *(M. D., College of Physicians and Surgeons, Chicago).* Minneapolis.

Sikes, George Cushing, *B. S., '92.*	Minneapolis.
Soublette, George W. *B. A., '78, Kirksville College.*	Minneapolis.
Stacy, Francis Newton, *B. A., '88.*	Minneapolis.
—Stacy, Ima Winchell, *B. L. '88.*	Minneapolis.
—Strohmeier, Lydia Kathrina, *B. A., '89.*	Minneapolis.
Thorstensen, T. K., *St. Olaf's College.*	Hanley Falls.

II. UNDERGRADUATE STUDENTS.

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS.

SENIOR CLASS—73.

Classical Section—25.

Angus, William,	Garfield.
Borncamp, John Edward,	Minneapolis.
Empy, Clarence R.,	Hastings.
Ferree, Charles Wesley,	Minneapolis.
Flaten, Nils,	Dennison.
Hannum, Harry Oliver,	Minneapolis.
Hartley, Heber Lindon,	Minneapolis.
Jenson, Nels,	St. Paul.
Knudson, Albert Cornelius,	St. Paul.
Larson, Constant,	Alexandria.
Massey, Freedom Chester,	Louisville, Wis.
Merrill, George Plumer,	Minneapolis.
—Peters, Elizabeth Alma,	Minneapolis.
Peterson, George,	Washington, D. C.
Phillips, James E.,	Lake City.
—Potter, Franc Murry,	Minneapolis.
Powell, John Walker,	Brooklyn Center.
Pratt, Albert Fuller,	Anoka.
—Rhoades, Grace Melita.	St. Paul.
Selover, William Arthur,	Minneapolis.
Sethre, John Olaf,	Carlisle.
Stack, George Franklin,	Anoka.
Walker, Edward David,	St. Paul.
Wallace, Thomas Freeman,	Minneapolis.
Young, Charles Elon,	Minneapolis.

Scientific Section—22.

—Austin, Mabel Fletcher,	St. Paul.
—Bassett, Mary Elizabeth,	Hastings.
—Berg, Anna Naphtalia,	Minneapolis.
Berseth, Andrew Mikkelson,	Colfax, N. D.
—Bonwell, Sadie L.,	Blue Earth City.
Carel, Hubert Charles,	St. Paul.
Folwell, Russell Heywood,	Minneapolis.
Frost, William Dodge,	Minneapolis.
—Gibbs, Gertrude E.,	Monticello.
Grotte, Anthony,	Minneapolis.
Hahn, Roland Bruce,	Minneapolis.
Huntington, Arthur Elon,	Luverne.
Huntington, George Lincoln,	Luverne.
—Kellogg, Clara N.,	St. Paul.
Lunke, Richard Olaus,	Minneapolis.
Patterson, Eugene L,	Mankato.
Poehler, Franklin Theodore,	Minneapolis.
Scherer, Robert Walter,	New Ulm.
Sigvaldson, Sigurdur,	Minneota.
—Smith, Mary Comstock.	Algona, Ia.
Taylor, Benjamin Chandler,	Minneapolis.
—Walter, Louise Grace,	St. Paul.

Literary Section—26.

—Adams, Ada Edith,	Minneapolis.
—Allen, Emma Frances,	Ashland, Or.
—Bell, Gertrude Grosvenor,	Minneapolis.
Birdsall, Albert Thornton,	N. Y. City.
—Colgrove, Maude Comfort,	Minneapolis.
—Colter, Mabel Augusta,	St. Paul.
—Cooley, Martha May,	Minneapolis.
—Dresser, Helene Alice,	Minneapolis.
—Elwell, Jessie Helen Campbell,	Minneapolis.

—Folsom, Mary Louise,	Minneapolis.
—Fuller, Lillian,	Litchfield.
Gjerset, Knut,	Hagen P. O.
—Harris, Emily Ruth,	Faribault.
—Johnson, Leila Pamelia,	Minneapolis.
—Lougee, Mary Holley,	Minneapolis.
—McCoy, Josephine,	Algona, Ia.
—McCoy, Louise,	Algona, Ia.
—McGregor, Jessie Clifford,	Minneapolis.
—McGregor, Saidee,	Minneapolis.
—Michelet, Maren Bastine Hals,	Minneapolis.
—Perkins, Minnie Arabella,	Minneapolis.
Salisbury, Percy Pritchard,	Minneapolis.
—Smith, Jessie Paine,	Algona, Ia.
Spear, George Hancock,	Minneapolis.
—Sterrett, Lillian Josepha,	Lake City.
White, Harry Edgar,	Clear Lake.

JUNIOR CLASS—95.

Classical Section—25.

Anderson, Frank Maloy,	Minneapolis.
Briggs, John Gallup, Jr.,	Cheney.
Dewart, John Harry,	Faribault.
Erickson, Charles Alfred,	Alexandria.
Foot, Fred Warner,	Red Wing.
Goldblum, Hal Sol,	Minneapolis.
—Graham, Olive Belle,	Anoka.
Greenwood, Carl de Forris,	Garden City.
Hastings, Walter Henry,	Minneapolis.
Helliwell, Arthur Llewellyn,	Minneapolis.
Kiehle, Frederick Andrews,	Minneapolis.
Larson, Augustus Theodore,	Alexandria.
Leach, Harris Eaton,	Spring Valley.
Leavitt, Frank W.,	St. Paul.
Martin, Harrison Burke,	St. Paul.
May, Albert Edward,	Minneapolis.
Northrop, Cyrus, Jr.,	Minneapolis.
Officer, Harvey, Jr.,	St. Paul.
Paquin, Samuel Savil,	Little Falls.
—Pratt, Roberta,	Minneapolis.
Steenson, James,	Eden Prairie.
Van Valkenburg, Jesse,	Canby.
Whitman, Clarence Leroy,	Owatonna.
Williams, Archie Elton,	Minneapolis.
—Wright, Ella Theoline,	Rushford.

Scientific Section—41.

Anderson, Alexander Pierce,	Red Wing.
Ballard, Caswell Aden,	Zumbrota.
Barney, Frank Hadwen,	Minneapolis.
Bauer, George Neander,	Minneapolis.
Beebe, Dan Goodwin,	Minneapolis.
Bisbee, Edgar Charles,	Madelia.
Burbank, David Redman,	Duluth.
—Burgess, Georgie Annie,	Minneapolis.
Carter, Norton Ells,	Delevan, Wis.
Carver, Walter M.,	Tracy.
Clark, Theodore,	St. Cloud.
Coe, William Tatnall.	Minneapolis.
—Craig, Marion Jeanie,	St. Paul.
Crecilius, John Augustus,	Milan, O.
—Everts, Katherine J.,	Minneapolis.
—Fleming, Hattie Evelyn,	Minneapolis.
—Freeman, Emma Katherine,	St. Paul.
Green, Frank Evard,	Bernadotte.
Harding, Everbart Percy,	Waseca.
Hawley, George M. B.,	Minneapolis.
Jackson, Robert L.,	Minneapolis.
Litzenburg, Jennings Crawford	Minneapolis.
Lord, Lewis Percy,	Owatonna.
Love, Henry Johnston,	Atlanta, Ga.
—McDonald, Hope,	Minneapolis.
—Mace, Blanche Alma,	Hastings.
Manson, Frank Melville,	Minneapolis.
Manuel Malvern Hill,	Bellingham.
Moffett, James Burch, Jr.,	Minneapolis.
Pattee. Charles Sumner,	Minneapolis.

Paulson, Alfred Parker,	Waseca.
—Robbins, Edith A.,	Merriam Park.
Rossman, Grant Beebe,	Warren.
Setan, John Magnus,	Norway.
Sheldon, Edmund Perry,	Prospect Park.
Shepherd, Reuben Spencer,	Dover.
Strathern, Fred Paul,	Rich Valley.
Sumner, Francis Bertody,	Minneapolis.
Topping, Charles Henry,	Litchfield.
Wentworth, Frank Herman,	Cresbard, S. D.
Wollan, Carl Thomas,	Starbuck.

Literary Section—29.

Andrist, Charles Martin,	Roscoe.
Bagley, Horace Eaton,	Melbourne, Ia.
Barto, William Allen,	Sauk Center.
—Bates, Lulu Marilla,	St. Louis Park.
—Beck Lily Louise,	Minneapolis.
—Beebe, Inga,	Minneapolis,
—Bradford, Jessie Allen,	Minneapolis.
—Burnes, Clara Thornton,	Hopkins.
—Byrnes, Agnes Paula,	Minneapolis.
—Case, Maud Mary,	St. Peter.
—Cole, Eugenia Louisa,	Minneapolis.
—Frankenfield, Laura E.,	Minneapolis.
—Hamblin, Susie E.,	Minneapolis.
—Hawley, Mary E.,	Minneapolis.
—Herzog, Ida May,	Chowen.
—Hughes, Mabel Lucy,	Anoka.
—Huntoon, Ruth Abigail,	Minneapolis.
—Pabodie, Alice Clarissa,	Baraboo, Wis.
Poehler, Walter Charles	Minneapolis.
—Robinson, Jane Davidson,	Minneapolis.
—Selden, Kate Forbes,	Minneapolis.
—Shepard, Alice Lee,	Minneapolis.
Simonton, William Adair,	Sauk Center.
Smith, E Fay,	St, Paul.
Smith, William Austin,	St. Paul.
—Steele, Mary Gertrude	Minneapolis.
Tuve, Martin Luther,	Dalton.
VanderHorck Conrad Zencius	Minneapolis.
—Zimmerman, Una Isabel,	St. Paul.

SOPHOMORE CLASS—111.

Classical Section,—31.

Aspden, Herbert Henry,	Excelsior.
Baldy, Fred Carroll,	Minneapolis.
Caldwell, Alexander Woods,	St. Paul,
Clark, Leroy Eaton,	Minneapolis.
Clifford, Elmer,	Lake City.
Colwell, Thomas Henry,	Minneapolis.
Day, Ernest E.,	Minneapolis.
Elwell, Talmadge Robert,	Minneapolis.
Fowler, Charles Hitchcock,	Minneapolis.
Gilfillan, Fred James,	St. Paul.
Godward, William Alexander,	Evansville.
Goodwin, Godfrey Gunnar,	St. Paul.
Gray, George Annand,	Lake City.
Green, Eugene K.,	Brooklyn Center.
Huhn, Carl,	Minneapolis.
—Jackson, Katherine	Minneapolis.
Loe, Daniel O.,	Grand Meadow.
Mathews, Edward William, Jr.,	Cambridge, O.
—Maxwell, Corrinne Jennie,	Hudson, Wis.
Norris, Harriman,	Minneapolis.
Page, Irving Gonyer,	Anoka.
—Parker, Marion Alice,	Minneapolis.
Peterson, Erick Anton,	Red Wing.
Rogers, Clarence R.,	Minneapolis.
Silsness, Even Toresius,	Minneapolis.
—Titus, Mary Washburn,	Rochester.
Truesdell, Lynn George,	Owatonna.
Twing, William Fuller,	Minneapolis.
Wells, Benjamin Samuel,	Duluth.
—Wells, Hattie Eliza,	Minneapolis.
—Wright, Blanche Almeda,	Minneapolis.

Scientific Section—48.

Allen Harry Winslow,	Red Wing.
Ames, Ward, Jr.,	Duluth.
Barnard, John Guliker,	Sauk Center.
Buckley, Daniel,	Farmington.
Clark, Howard S.,	Madison, S. D.
Condit, William Henry.	Minneapolis.
Cook, Roy Jay,	Minneapolis.
Crocket Seldon,	Moorhead.
—DeKay, Cornelia,	Red Wing.
—Dutcher, Kate Ethel,	Austin.
—Espy, Lila Wood,	St. Paul.
—Fisher, Lizzie May,	Minneapolis.
Flanders, William B.,	Kandiyohi.
Fowler, Harry A.,	Minneapolis.
—Fox, Henrietta Gertrude,	Minneapolis.
Guilford, Harry Morrill,	Minneapolis.
Hare, Edward T.,	Minneapolis.
—Hatch, Lillian,	Lake City.
Hodgson, John Edward,	Hamline,
—Holbrook, Anna Henshaw.	Minneapolis.
Huntley, William Welcome,	Minneapolis.
Johnston, George Smith,	Minneapolis.
—King, Clara Florilla,	Otsego.
—Lagerstrom, Lydia Theodora,	Minneapolis.
Lyon, Willard Crosby,	Fargo, N. D.
McDermid, Reuben Rosser,	Minneapolis.
Miller, Clarence Benjamin,	Pine Island.
Moore, Albert Hall,	Minneapolis.
Muir, William Cyrus,	Hunter, N. D.
Murfin, Arthur M.,	Sleepy Eye.
Nickerson, Harry Barnard,	Elk River.
Olson, Carl Oscar Alexius,	Minneapolis.
—Peterson, Jonina Rose,	Newark, S. D.
—Peterson, Joan Thorunn,	Newark, S. D.
Pope, Jesse Eliphalet,	Fontanelle, Ia.
Ramaley, Francis	Albert Lea.
Ransom, Charles Anthony,	Hastings.
Reed, Charles Anthony,	Albert Lea.
Reed, Edwin Thomas,	River Falls, Wis.
Rees, Soren P	Stillwater.
Schwager, Lewis,	Bethany.
Soule, Stephen Barber,	Minneapolis.
Strong, John Carver,	Decorah, Ia.
Taylor, William John,	Minneapolis.
—Thomas, Mabel Hickman,	Mankato.
—Tilden, Josephine Elizabeth,	Minneapolis.
White, McLaughlin,	Minneapolis.
—Williams, Linda,	Roscoe.

Literary Section—32

—Austin, Isabella McHugh	Minneapolis.
—Bedient, Louise,	Kasson.
Bonwell, Arthur Gano,	Blue Earth City.
Boraas, Julius,	Hader.
—Bradford, Bertha Rose,	Minneapolis.
Campbell, Walter Henry,	Alexandria.
Dalrymple, Wm. Fergusen,	St, Paul.
Devereux, Thomas,	Minneapolis.
—Doherty, Agnes Elizabeth,	St. Paul.
—Doherty, Mary Helena,	St. Paul.
—Eaton, Rose Winnifred,	Wells.
Eliason, Adolph Oscar,	Montevideo.
Edithorpe Clarence,	Gem, S. D.
—Felch, Susie,	Elk River.
—Fillman Flora Ellen,	Menomonie, Wis.
—Grant. Mrs. Avis Winchell,	Minneapolis.
—Hart, Emma Maria,	Spring Valley.
—Hoyt, Mary Anna,	Minneapolis.
Johnson, Edwin Martin,	Sauk Centre.
—Kohler, Elizabeth Louise,	Hastings.
—Lawrence, Margaret Laura,	Minneapolis.
—McCormick, Agnes H.,	Minneapolis.
—McDonald, Margaret	Minneapolis.
—Moore, Lillian Randall,	St. Paul.
—Morse, Minnie Frances,	Minneapolis.
—Page, Cora Lougene,	Minneapolis.

—Robinson, Mattie May,	Minneapolis.
Stageberg, Olaf Olson,	Dawson.
—Stone, Minnie Evangeline,	Minneapolis.
Thompson, Robert Mitchell,	Minneapolis.
—Trask, Mrs. A. M.,	Grand Forks, N. D.
Webb, George Collins,	Arcadia, Wis.

FRESHMAN CLASS—216.

Classical Section—38.

Anderson, Arthur Edward,	Red Wing.
Anderson, Frank Leonard,	Red Wing.
Barton, Edgar, Reginald,	Minneapolis.
Bestor, Frank C.,	Minneapolis.
Bratrud, Theodor.	Spring Valley.
—Breckenridge. Julia Reed,	Decorah, Ia.
Bursell, Herbert Edward R.,	Minneapolis.
Case, Martin Williams,	Minneapolis.
Cody, Luther Morrill,	Canterbery, N. H.
Curtiss, Frederic Hamilton,	Minneapolis.
—DeMars, Mary Lucie,	Minneapolis.
Dewart, Murray Wilder,	St. Cloud.
—Dickinson, Lucy E.,	Minneapolis.
—Drew, Mary Ellen,	Burlington, Vt.
Finlayson, George Albert E.,	Crookston.
Garrity, Harry,	Minneapolis.
Gould, Chester Nathan,	Owatonna.
Haugan, Otto Martin,	Red Wing.
Hempstead, Clark,	Minneapolis.
Higbee, Paul Albert,	Minneapolis.
Keyes, Charles Frederick,	Minneapolis.
Lofstrom, Emery Elmer,	Litchfield.
Melvin, Wilton W.,	Mankato.
Morley, Frank Johnson,	Minneapolis.
Newell, Horatio Small,	Robbinsdale.
Scholberg, Martin H.,	Ortonville.
—Simmons, Rose Anthony,	Hastings.
Simpson, Marcus Julius,	Santa Monica, Cal.
—Smith, Mary Chadbourne,	Minneapolis.
Sperry, Frederick James,	Wasioja.
Stuart, George Washington,	Chariton, Ia.
Sturges, Frederick Wilton,	Concordia, Kan.
—Tennant, Grace Mabel,	Minneapolis.
Thayer, H. Milton,	Excelsior.
Thorpe, George Cyrus,	Hancock.
Tirrell, John Mahlon,	Minneapolis.
—Webb, Alice Catharine,	Minneapolis.
Wingate, Charles B,,	Minneapolis.

Scientific Section—92.

Anderson, Oscar,	Zumbrota.
Artz, Emanuel Arthur,	St. Paul.
Avery, Jacob Fowler,	Minneapolis.
—Batchelder, Eva Alberta,	St. Charles.
Baker, Axcel Conrad,	Rochester.
—Baker, May Helen,	Brownton.
Beaven, Arthur Hubert,	Minneapolis.
—Beach, Elizabeth,	Faribault.
Berg, John Nelson,	Minneapolis.
—Blaisdell, Helen Elizabeth,	Minneapolis.
Blake, Robert Pennell,	St. Anthony Park.
Brooks, Harry Bayard,	Renville.
—Butler, Alice Louise,	Faribault.
Chapman, Herman Haupt,	St. Paul.
—Chase, Bertha G.,	Faribault.
Christensen, Peter Jeremiah,	Crookston.
—Clark, Isabella Janet,	Mandan, N. D.
—Cook, Bessie M.,	Rochester.
Cook, Burt Arthur,	Minneapolis.
—Crane, Laura,	Austin.
—Crane, Jean,	Austin.
Dalrymple, John Stewart,	St. Paul.
Davies, John Milton,	Courtland.
Day, Reuben Noble,	Minneapolis.
Erb, Fred Alexander,	Minneapolis.
—Evans, Emma C.,	Stillwater.
Farmer, Daniel E.,	Spring Valley.
Faroen, Ananias Hanson,	Fisher.

—Felton, Hattie Hortensia,	Minneapolis.
—Felton, Mary E.,	Minneapolis.
Field, Peter,	Meroa, Ia.
—Foss, Elizabeth Hankenson,	Minneapolis.
Galloway, Lee,	Faribault.
—Gilman, Constance L.,	St. Cloud.
Gregory, Joel Ernest,	St. Paul.
Gruenberg, Benjamin,	Minneapolis.
—Hagar, Martha Mackinlay,	Monticello.
Hageboeck, August,	Minneapolis.
Hartman, Wm. David,	W. Superior, Wis.
—Hazeltine, Mary Frances,	Minneapolis.
—Hayden, Hattie Margaret,	Minneapolis.
Hinckley, Frank Loraine,	Luverne.
—Holland, Mary Allen,	Minneapolis.
Holp, Jacob Agassiz,	Butte, Montana.
—Holtz, Eleanor,	Minneapolis.
Huxley, Fred,	Plainview.
Keene, Ralph Kendall,	Mankato.
—Kirtland, Rhodella,	Minneapolis.
—Langmaid, Abbie Bailey,	Granite Falls.
Lawrence, William Hamilton,	Wabasha.
Lee, Algernon Herbert,	Minneapolis.
Lewis, John Hoover,	Faribault.
Loe, Adolph Oscar,	Minneapolis.
—Long, Jessie,	Minneapolis.
McCadden, William,	Fairmont.
—MacDermid, Kate,	Minneapolis.
McDermott, Thomas Ignatius	Stillwater.
—McKusick, Elva A.,	Minneapolis.
—McKusick, Mary Servia,	Minneapolis.
—Mantor, Flora May,	Willmar.
Matteson, Herman Howard,	Minneapolis.
Maxwell, Asa Frank,	Minnehaha Falls,
Miller, Edward Archibald,	Winthrop.
—Miller, Grace Hannah,	Minneapolis.
Mills, Frederick,	Elk River.
—Mitchell, Mildred W.,	St. Paul.
Mosher, Wells John,	Zumbrota.
—Ostrum, Clara Charlotte.	St. Paul.
Perkins, Maynard Cyrus,	Minneapolis.
Pickett, Victor Goodrich,	Albert Lea.
Plummer, Henry S.,	Hamilton.
—Ripley, Abigail,	Minneapolis.
Ross, Hiram Earl	Sioux Falls, S. D.
*Sandbo, Ole J.,	Hills.
Sasse, Frank George,	St. Charles.
Savage, Frank Joseph,	St. Paul.
Scott, Daniel A.,	Faribault.
—Selover, Jennie Howard,	Minneapolis.
Sharpless, Joseph Wollerton,	Minneapolis.
Smith, Erastus,	Minneapolis.
Spear, Fred Lindsey,	Minneapolis.
Thompson, Reuben Celius,	Preston.
Uhl, Alfred Woodbridge,	Minneapolis.
Wakeman, Harry Emmet,	Willmar.
Walther, William Carl,	St. Paul.
Werner, Carl Gustaf Alexius,	Minneapolis,
Wendell, Wm. Fuller,	Minneapolis.
Weatherson, Charles Edkin,	Dundas.
—Weston, Florence Mabel,	Minneapolis.
—Williams, Adella Weltha,	Roscoe.
Winchell, Alexander Newton,	Minneapolis.
Yetter, Clarence Archie,	Minneapolis.

Literary Section—65.

—Ankeny, Sara Thompson,	Minneapolis.
—Austin, Ella May,	Minneapolis.
—Baker, Helen Josephine,	Monticello.
—Baxter, Susan Theresa,	Minneapolis.
Bartholomew, Fred Roscoe,	Chariton, Ia.
—Bennett, Frances Louise,	Minneapolis.
Blacknier, Rae C.,	Albert Lea.
—Bollinger, Katherine,	St. Paul.
Breding, Ben Noble,	Minneapolis.
—Burrell, Anna H.,	Elk River.
Carlson, Henry,	Albert Lea,

—Carrick, Jessie,	St. Cloud.
—Carter, Claudine,	Minneapolis.
—Clark, Grace Belknap,	Mankato.
—Clough, Olive Leila,	Minneapolis.
—Comstock, Ada L.,	Moorhead.
—Cooper, Rosa Zaddie,	Sauk Centre.
—Crocker, Anna Estella,	Minneapolis.
—Crouch, Frances Mae,	Rochester.
—Daniels, Mary,	Minneapolis.
—Davidson, Mary Isabella,	Minneapolis.
Donahower, Harry L.,	St. Peter.
—Edwards, Christina,	Minneapolis.
Ellingson, George Henry,	Sogn.
Esterly, Frank Curtiss,	Minneapolis.
Farmer, Ernest M.,	Spring Valley.
—Fletcher, Ella May,	Mankato.
Foster, Wesley Sherman,	Dover.
—Fullerton, Caroline A.	Minneapolis.
—Frye, Clara,	Elk River.
—Gibbs, Elsie C.,	Monticello.
—Goodnow, Elizabeth,	Minneapolis.
—Helliwell, Clare Frances,	Minneapolis.
—Hillman, Ada Belle,	Minneapolis.
—Hoverstad, Bertha,	Halden.
Howe, Harry Chapman,	Owatonna.
—Hungerford, Josephine L.,	Minneapolis,
Kinney, Alvin Claude,	Lake City.
Krause, Orlin Philip,	Dover.
—Levens, Nellie,	Albert Lea.
—Mabey, Nellie,	Lake City.
—McClure, Eleanor Estelle,	Stillwater.
—McClure, Nellie,	Stillwater.
Mayo, Alfred David,	Leavenworth, Kan.
—Mitchell, Carrie T.,	St. Cloud.
—Nelson, Nora L.,	Kasson.
—Peters, Helen M.,	Minneapolis.
—Plummer, Lydia May,	Minneapolis.
—Robb, Charlotte Estelle,	Minneapolis.
—Robbins, Alice Greely,	Minneapolis.
Rönning, Nils Nilsson,	Boe, Norway.
—Rosger, Emma F.,	Minneapolis.
—Sargent, Helen D.,	St. Paul.
—Seely, Blanche Maguerite,	Minneapolis.
—Shepard, May Pillsbury,	Minneapolis.
Simpson, Earl,	Winona.
—Steele, Cora Perle,	Minneapolis.
—Van Cleve, Mary Adams,	Minneapolis.
Wiegel, William Barton,	Plainview.
—Weir, Mary Delia,	Minneapolis.
—Wentworth, Margery Pepperell,	Cresbard, S. D.
White, Fred W.,	Austin.
—Whitney, Joella Elsie,	St. Paul.
—Woodward, Agnes Young,	Minneapolis.

Teachers' Section—22.

—Bell, Mrs. Minnie Carrick,	St. Cloud.
—Gozzard, Ada,	Minneapolis.
—Griffith, Carrie Virginia,	Minneapolis.
—Griffith, Jessie M.,	Minneapolis.
—Hookey, Edith Hannah,	Minneapolis.
—Iverson, Ella Eva	Minneapolis.
—Johnston, Harriet Cecilia,	Minneapolis.
—Luce, Lizzie,	Minneapolis.
—Miller, Lillie May,	Minneapolis.
—Miller, Sarah Helen,	Minneapolis.
—Morris, Agatha B.,	Minneapolis.
—Phillips, Saidee Vjola,	Minneapolis.
—Pond, Fanny Wilson,	Bloomington.
—Roney, Katherine Eva,	Winthrop, Ia.
—Smith, Elsie Blanche,	Minneapolis.
—Snow, Mae,	St. Cloud.
—Stevens, Jessie Eliza,	Coon Creek, Pa.
—Struble, Clara,	Lamoure, N. D.
—Thaxter, Mary E.,	Minneapolis.
—Waite, Juliette E.,	Minneapolis.
—Winton, Adelaide Ann,	Minneapolis.
—Witchie, Sophie May,	Rochester.

SPECIAL STUDENTS—136.

Andrews, Sewall DuBois,	Minneapolis.
Arkin, Abel Jay,	Minneapolis.
Aron, A.	Minneapolis.
Barrows, Clarke,	Minneapolis.
—Barton, Bertha May,	Minneapolis.
—Best, Laura Bird,	Minneapolis.
—Best, Lillian B.,	Minneapolis.
Bjelland, Adolph Odin,	Albert Lea.
—Blasdell, Fannie Maria,	Minneapolis.
—Blanchard, Lucy H. Adams,	St. Paul.
—Blethen, Stella Mabelle,	Rochester.
—Booth, Bertha,	Animosa, Ia.
Borncamp, Charles Jacob,	Minneapolis.
—Bowen, Bertha C.,	Minneapolis.
—Bowen, Florence,	Minneapolis.
—Brennan, Laura E.,	Hudson, Wis.
—Brewer, Jeanette Jenkin	Minneapolis.
—Brewer, May Tuttle	Minneapolis.
—Brown, Augusta,	Minneapolis.
Brown, Clarance Zelora,	Minneapolis.
Brown, Pearl Hubert,	Minneapolis.
—Campbell, Mahala Pillsbury,	Minneapolis.
—Campbell, Mary Andrews,	Minneapolis.
—Cauvet, Viola I.,	Minneapolis.
—Clough, Zua Elva,	Minneapolis.
—Charnley, Ida F.,	Minneapolis.
—Cochrane, Mrs. M. M.,	Minneapolis.
—Colburn, May,	Algona, Ia.
Cox, Norman J.,	Wasioja.
—Cudworth, Anna Blossom,	St. Anthony Park.
—Deming, Agnes Cornelia,	Middletown, Conn.
—Dennison, Lottie May,	Minneapolis.
—Derickson, Maud E.,	Minneapolis.
—Dresser, Medora E.,	Minneapolis.
—Dyer, Alice,	Minneapolis.
—Eastman, Frances A.,	Rose Creek.
Eckholdt, Walter,	Rochester.
—Evans, Mrs. T. McKee,	Minneapolis.
Evans, Charles Haskins,	Merriam Park.
—Farnsworth, Ethel N.,	Minneapolis.
—Feagles, Hattie B.,	Minneapolis.
—Firkins, Frances,	Minneapolis.
Fossum, Julius,	Valparaiso, Ind.
—Gilman, Lucile Elizabeth,	St. Cloud.
—Glover, Agnes Iona,	Minneapolis.
—Gowdy, Chestine,	Minneapolis.
—Graham, Florence Elizabeth,	Minneapolis.
—Graves, Maud,	Adrain.
Groat, Benjamin Fellaud,	St. Paul.
—Hartley, Mary E.,	Minneapolis.
Hare, Earl Russell,	Minneapolis.
—Hastings, Margarette,	Minneapolis.
Haugelund, Hans, Jr.,	Norway.
—Hawley, Elizabeth McK.,	Minneapolis.
Hendrickson, Henrik N.,	Montevideo.
—Hendrix, Julia,	Minneapolis.
—Hine, Mary Eliza.	Minneapolis.
—Horning, Jennie,	Minneapolis.
Hoveland, Henry Bert,	Zumbrota.
—Jackson, Harriet,	Minneapolis.
Jenks, Orin Roe,	Minneapolis.
—Jones, Katherine Du Mars,	Minneapolis.
—Kamrar, Bertha A.,	Blue Earth City.
—Kenrick, Edith Fletcher,	St. Paul.
—Kiehle, Louise Gilman,	Minneapolis.
Kimball, Harry Spofford,	Minneapolis.
—Ladue, Kate Stuart,	Minneapolis.
—Lake, Nellie Estelle,	Minneapolis.
—Lawrence, Mrs. Kate May,	Minneapolis.
Leahy, E. P.,	Minneapolis.
—Leavitt, Clara Kezia,	Minneapolis.
—Leavitt, Mrs. Mabelle Howe,	Minneapolis.
—Lee, Mrs. Thomas G.,	Minneapolis.
—Lewin, Mrs. Sarah Morton,	Hyattsville, Md.
—Livingstone, Katherine Agnes,	LaCrosse, Wis.

McAndrew, James Edward,	Iroquois, S. D.
—McFadden, Mary,	Minneapolis.
—MacMillan, Mrs. Conway,	Minneapolis.
—Mann, Helena,	St. Paul.
Matteson, Roy Grow,	St. Paul.
—McNamara, Mary Jeanette,	Minneapolis.
Medley, Eugene,	Minneapolis.
—Merrill Nellie Louise,	Minneapolis.
Mills, Frank Junius,	Dwight, Ill.
—Mitchell, Mildred Florine,	Madelia.
Norton, John,	Blue Earth City.
—Oberg, Malvina Amalie,	Watertown.
—Parker, Virginia Martha,	Minneapolis.
—Parker, Florence Eastman,	Minneapolis.
—Peck, Mabelle,	Shakopee.
Perkins, George Albion,	Red Wing.
—Piper, Ida May,	Watkins, N. Y.
—Porter, Mary Steele,	Minneapolis.
—Pratt, Irene Sarah,	Minneapolis.
—Ragan, Mareella,	Minneapolis.
Rankin, James Henry,	Minneapolis.
Rask, O. H.,	Minneapolis.
—Reed, Mrs. Mary Watson,	Hastings.
Rice, David Perry,	Rockland, Mass.
Ringdahl, Melvin I.,	Zumbrota.
—Roach, Maud Imogen,	Minneapolis.
—Sandberg, Alice Marie,	Minneapolis.
—Schneider, Mrs. Albert,	Minneapolis.
—Scudder, Nellie,	Minneapolis.
—Selden, Kate F.,	Minneapolis.
—Severence, Carrie Anna,	Minneapolis.
—Shepardson, Mrs. G. D.,	Minneapolis.
—Sherwood, Clara,	St. Paul.
—Short, Edith Mary,	Austin.
—Sinsheimer, Estelle,	Minneapolis.
Slusser, Charles Earnest,	Milwaukee Wis.
—Smith, Ada Augusta,	Spring Valley.
—Soares, Claude S.,	Minneapolis.
Stevens, James Fifield,	Spring Valley.
—Sullivan, Ellen,	Wabasha.
—Sweetser, Mrs. Horatio B.,	Minneapolis.
—Sylvester, Mabelle Clare,	Madelia.
—Tate, Mrs. J. M.,	Minneapolis.
Thorson, Peter Edward,	Martell, Wis.
Torelle, Adolph Nels,	Marine Mills.
—Torelle, Ellen,	Marine Mills.
—Totten, Mrs. Mary King,	Minneapolis.
—Treadwell, Mary Roberta,	St. Peter.
Triggs, Floyd W.,	Minneapolis.
—Trost, Mary Anna,	Wahpeton, N. D.
Turner, Arthur L.,	Faribault.
—Upton, Mabelle Blanche	Minneapolis.
Ward, De Forrest,	Fairmont.
—Ward, Jessie LaRue,	Minneapolis.
Warren, Frank Stoubs,	St. Paul.
Wellman, Harvey,	Quincy, Ill.
—White, Zada Arel,	Spencer, Ia.
—Williams, Helen Cogswell,	St. Paul.
—Williams, Lillian Adella,	Minneapolis.
Wilson, Halsey William,	Minneapolis.
Wilson, Luke Ingals,	Minneapolis.

COLLEGE OF ENGINEERING, METALLURGY AND THE MECHANIC ARTS.

SENIOR CLASS—13.

Civil Engineering Section—4.

Anderson, Ole John,	Nicollet.
Batchelder, Frank Leslie,	Stillwater.
Erf, John William,	Monroeville, O.
Hoyt, Hiram Patrick,	Minneapolis.

Mechanical Engineering Section--2.

Avery, Henry Brinckerhoff,	Minneapolis.
Couper, George B.,	Minneapolis.

Electrical Engineering Section--6.

Chase, Arthur W.,	Hastings.
Dewey, William Harry,	Minneapolis.
Guthrie, John DeMott,	Minneapolis.
Morse, George Hart,	LaCrosse, Wis.
Reidhead, Frank Erven,	Minneapolis.
Springer, Frank Wesley,	Anoka,

Architectural Section--1.

Washburn, Delos Cuyler,	Monticello.

JUNIOR CLASS--19.

Civil Engineering Section--5.

Abernethy, Wm. Shattuck,	Minneapolis.
Cunningham, Andrew Oswald,	Walhalla, N. D.
Gilman, James B.,	Minneapolis.
Johnson, Noah,	Litchfield.
Wentworth, Romeyn Wallace,	Minneapolis.

Mechanical Engineering Section--3.

Burt, Austin,	Minneapolis.
Cramb, Roscoe Leland,	St. Cloud.
Esterly, Burton H.,	Minneapolis.

Electrical Engineering Section--7.

Andrews, Horace S.,	Minneapolis.
Bray, George Eben,	Excelsior.
Chalmers, Charles Henry,	Lake City.
McNair, Albert Day,	Danville, N. Y.
Munro, James Noble,	Thillmanton.
Pratt, Edward Electus,	Minneapolis.
Schlegell, Frederick von	Minneapolis.

Mining Engineering Section--3.

Christianson, Peter, *B. S. '90*,	Bath.
Corbett, Frank,	Minneapolis.
Stackhouse, John Lawson,	N. Yakima, Wash.

Architectural Section--1.

Fuller, Lester Jed,	Minneapolis.

SOPHOMORE CLASS--27.

Civil Engineering Section--5.

Atty, Norman Belmont,	Minneapolis.
Bohland, John Adam,	St. Paul.
Cassedy, George Albertus,	Rochester.
Chapman, Leslie Howard,	Litchfield.
Perry, Clinton Morrison,	Minneapolis.

Mechanical Engineering Section--5.

Northway, Robert Stanley,	Minneapolis.
Pease, Levi Beckley,	Minneapolis.
Shepherd, Burchard Post,	Dover.
Tilderquist, William Magnus,	Vasa.
Tunstad, Blake Edward,	Minneapolis.

Electrical Engineering Section--10.

Adams, George Francis,	Owatonna.
Bishman, Adam Edgar,	Otisco.
Ford, Robert Edgar,	Minneapolis.
Knapp, Wilbur Martin,	Colfax, Wis.
Phelps, Clyde Samuel,	Litchfield.
Rounds, Fred M.,	Minneapolis.
Smith, Edward Everett,	E. Corinth, Me.
Tanner, Harry Louis,	Minneapolis.
Walker, Frank Bates,	Minneapolis.
Weaver, Albert Clarence,	Lake City.

Mining Engineering Section--5.

Cutler, Harry Cleveland,	Red Wing.
Hughes, Thomas Moffatt,	Minneapolis.
Kernohan, Robert Burt,	Warren, O.
Spry, James Edwin,	Minneapolis.
Wilkinson, Charles Dean,	Minneapolis.

Architectural Section--2.

Burghardt Karl,	St. Anthony Park.
Kinney, Alonzo George,	Austin.

FRESHMAN CLASS--61.

Civil Engineering Section--14.

Beyer, Adam C.	St. Paul.
Burch, Albert Morgan,	Animosa, Ia.
Byorum, Henry Engvall,	Minneapolis.
Cooley, Horace Greeley,	Minneapolis.
Dunton, Arthur M.,	Clearwater.
Ellis, Sydney Allan,	Austin.
Evans, James Hare,	Minneapolis.
Hugo, Victor,	Duluth.
Kane, Joseph Patrick,	Minneapolis.
Long, Fred Winston,	St. Paul.
Neil, Victor Adolph,	Vasa.
Nelson, Ralph William,	Benson.
Rhame, George Arthur,	Minneapolis.
West, Horatio Earl,	St. Paul.

Mechanical Engineering Section--8.

Adams, Alfred Ashby,	Spencer, Ia.
Andrews, Woodbury Fisk,	Minneapolis.
Babcock, Charles Merritt,	Elk River.
Hastings, Clive,	Minneapolis.
Hilferty, Charles Dutton,	Hastings.
Iverson, Lewis,	West Lake.
Nesbit, Robert,	Rochester.
Wells, Edgar C.,	Duluth.

Electrical Engineering Section--28.

Anderson, Martin Albert,	Hegbert.
Arrick, Charles Weaver,	Minneapolis.
Blackmer, John,	Minneapolis.
Bradford, John McCarthy.	Minneapolis.
Bryan, Albert Reuben,	Minneapolis.
Burch, Frank Earl,	Menomonie, Wis.
Carswell, Robert E.,	Minneapolis.
Chesnut, George I.,	Minneapolie,
Coleman, Lee Mason,	Minneapolis.
Dahl, Hans F. M.,	Lake Mills, Ia.
Digen, Gilbert Martin,	Granite Falls.
Dinsmore, Louis,	Minneapolis.
Dustin, Fred Garrish,	Minneapolis.
Garland, Albert Eugene,	Minneapolis.
Hill, Arthur L.,	Fairmont.
Holt, Pliny Eastman,	Minneapolis.
Huntington, Guy B.,	Luverne.
Joslin, Max Atherton,	Minneapolis.
Roberts, Bertram Warren,	Minneapolis.
Savage, Edward Snoad,	St. Paul.
Sprague, Charles Baldwin,	Minneapolis.
Stewart, Newton Prescott,	Spokane, Wash.
Waller, Charles Bishop,	New London, Conn.
Wheeler, Herbert Merrill,	Marshfield, Wis.
Whittelsey, Henry N.,	Minneapolis,
York, Michael Alonzo,	Minneapolis.
Zimmerman, Frank,	Rochester.
Zintheo, Clarence J.,	Sweden.

Mining Engineering Section--4.

O'Brien, Barrington,	St. Peter.
Sterling, Thayer Dawson,	Minneapolis.
Stout, Wilfred Oakley,	St. Paul.
Wheeler, Roy MacMillan,	Chicago, Ill.

Architectual Section--4.

Cross, Charles Henry,	Norman, Ia.
McCrea, Almeron Wallace,	Hamline.
Turner, George Arthur,	Minneapolis.
Yale, Washington, Jr.,	Minneapolis.

Chemical Engineering Section--1.

—Burt, Grace Sylvia,	Minneapolis.

Special Students--34.

Adams, Sidney Kyte,	Minneapolis.
Aldrich, Charles R.,	St. Anthony Fall.
Beard, William Henry,	Hunter, N. D.
Blair, Guy F.,	St. Paul.

Brackenbury, Cyril,	Chelsea, England.
Burgner, Linnaeus Peter,	Oberlin, O.
Caley, Guy Ross,	Minneapolis.
—Fallis, Catherine Ruth,	Minneapolis.
Frazee, Arthur M.,	Pelican Rapids.
Gray, Vance Isaac,	Lake City.
Hatch, H. E.,	Minneapolis.
Hibbard, Charles Freeman,	Rat Portage, Can.
Hjardemal, Herman Edward,	Minneapolis.
Hyslop, William Wallace,	Chester.
Jones, Cloyed Paul,	Sabin.
Lackor, Harry Daniels,	Minneapolis.
Lewis Perry,	Minneapolis.
Linton, James H.,	Minneapolis.
Long, Louis Landers,	Minneapolis.
Magnusson, C. Edward,	Stark.
Norris, John,	Minneapolis.
Pilsbury, Charles Lucien,	Minneapolis.
Rockwell, Thomas A.,	Oshkosh, Wis.
Rutherford, Harvey Webb,	Minneapolis.
Smith, Leroy Vernon,	Minneapolis.
Stack, William Evlin,	Minneapolis.
Staughton, Melville Dayton,	Winona.
Strong, Albert William,	Minneapolis.
Tanner, Wallace North,	Minneapolis.
Tasker, James,	Blue Earth City.
Thornton, Guy Livingston,	Minneapolis.
Weeks, W. C.,	Minneapolis.
Wolfrum, Otto,	Minneapolis.
Woodford, George B.,	Winchester, Ky.

SCHOOL OF PRACTICAL MECHANICS.

A Division, II Year==2.

Buck, Daniel,	Eau Claire, Wis.
Wyckoff, Walter Teall,	Worthington.

A Division, I Year==1.

Halvorson, Henry N.,	Minneapolis.

B Division==20.

Beach, Fred,	Minneapolis.
Day, Bert W.,	Minneapolis.
Folwell, William B. (*special*),	Minneapolis.
Gibbs, Hiram,	New Auburn.
Hallett Chester,	North St. Paul.
Hallner, Charles,	Minneapolis.
Hillier, George H.,	Grafton N. D.
Hutchins, William,	Minneapolis.
Lynch, John (*special*),	Minneapolis.
McNamara, Leonard,	Tower.
Millam, Charles Alexander,	Edina Mills.
Maberg Andrew,	Minneapolis.
Oftedal Sven S., (*special*),	Minneapolis.
Parker, Fred,	Minneapolis.
Rehder, Ferdinand A.,	Duluth.
Rothwell, John,	Mt. Pulaski, Ill.
Ryall, Frank G.,	Niagara, S. D.
Smith, Perry Handy,	Robbinsdale P. O.
Wall, Olaf,	Forest River, N. D.
Watson, William,	Minneapolis.

School of Design==48.

—Apfeld Adelaide,	St. Paul.
—Ardley, Marcia.	Minneapolis.
—Baker, Miriam F.,	Minneapolis.
—Bartlett, Mabel C.,	Husick Falls, N. Y.
—Beebe, Lida,	Minneapolis.
Bergly, Halvor O.,	Perley.
—Bicknell, Florence E.,	Minneapolis.
—Brown, Edith.	Minneapolis.
—Chapman, Jeanie H.,	Minneapolis.
—Cheney, Mary M.,	St. Anthony Park.
—Dakin, Ina L.,	Royalton.
—Darling, Elma,	Minneapolis.
—Darling, Emily F.,	Minneapolis.
—Dennison, Lottie M.,	Minneapolis.
—DuBoise, Mrs. Grace W.,	Minneapolis.
—Edwards, Mary,	Minneapolis.

—Eggers, Emily,	Minneapolis.
—Farrington, Frances,	Minneapolis.
—Freeman, Lillie J.,	St. Louis Park.
—Frost, Nellie,	Minneapolis.
—Gillam, Mrs. H.,	Minneapolis.
Griggs, George,	St. Paul.
—Hughes, Carrie,	Minneapolis.
Jerome, Charles W.,	Minneapolis.
—Kenrick, Edith F.,	St. Paul.
—Lathrop, Dora,	Minneapolis.
—Lee, Mrs. Thomas G.,	Minneapolis.
—Litzenberg, Jennie,	Minneapolis.
—Nelson, Anna H.,	Minneapolis.
—Newcomb, Mary,	Minneapolis.
—Nichols, Edna,	Minneapolis.
—Ogard Mrs. L. A.,	Minneapolis.
—Pool, Alice,	Minneapolis.
—Peterson, Maria,	St. Paul.
Rehse, George W.,	Minneapolis.
—Ryan, Agnes,	Minneapolis.
—Sprague, Mildred,	Minneapolis.
—Swenson, Georgine,	Minneapolis.
—Valentine, May,	St. Paul.
—Van Stan, Clara,	Minneapolis.
—Voorhees, Blanche,	Minneapolis.
Voorhees, Victor,	Minneapolis.
—Washburn, Nellie A.,	Monticello.
—Wells, Frances M.,	Owatonna.
—Wesley, Margaret E.,	Minneapolis.
—Wiley, Harriet B.,	Minneapolis.
—Wingate, Mary,	Minneapolis.
—Workman, Josephine,	Minneapolis.

COLLEGE OF AGRICULTURE—7.

JUNIOR CLASS—1.

Hoverstad, Torger A.,	Holden.

SOPHOMORE CLASS—2.

Sandsten, Emil P.,	St. Anthony Park.
Thompson, John,	Cottage Grove.

FRESHMAN CLASS—4.

Pendergast, Warren W.,	Hutchinson.
Smith, William George,	New Duluth.
Sorkness, Henry Oscar,	Ashby.
Stene, Andrew Edward,	Ashby.

SCHOOL OF AGRICULTURE.

A Class—21.

Borchert, Frank H.,	Bird Island.
Bowerman, Ralph E.,	Prosper.
Dower, Herbert J.,	Staples.
Glover, Arthur J.,	Zumbro Falls.
Harris, Henry C.,	Howard Lake.
Hiatt, William G.,	Redwood Falls.
Kohlhass, August M.,	Alexandria.
LeBorious, John J.,	Cottage Grove.
Loomis, John O.,	Albert Lea.
Major, Ernest W.,	St. Luke's, N. J.
Munro, Noble A.,	New Auburn.
Nessel, George W.,	Rush City.
Norswing, Knute B.,	Holden.
Shields, William A.,	Darwin.
Shuman, Fred R.,	Minneapolis.
Shuman, Harry W.,	Minneapolis.
Stearns, Harry F.,	Minneapolis.
Walters, Richard E.,	Lake City.
Ward, Austin,	Stewart,
Winkjer, Joel G.,	Garfield.
Wyatt, S. J.,	Minneapolis.

B Class—18.

Ames, Gordon,	Litchfield.
Bullis, Louis F.,	Winnebago City.
Coulahan, Francis B.,	Renville.
Flaten, Ove P.,	Granite Falls.

Haigh, Thomas A.,	Mankato.
Johnson, Fred O.,	Sacred Heart.
Kissack, James S.,	Wadena.
Lippitt, Chester B.,	White Rock, S. D.
McGrath, James C.,	Good Thunder.
Middlebrook, Elmer,	Eden Prairie.
Pettit, James H.,	Minneapolis.
Porter, George F.,	Red Wing.
Suter, Harry C.,	Welcome.
Walter, Fred R.,	Bellingham
Wheeler, William A.,	Winnebago City.
Wihlon, Herman C.,	Woodbury.
Wilson, James A.,	Lake City.
Wood, Rollin M.,	Arvilla, N. D.

C Class—67.

Anding, Charles,	Lake City.
Austin, George S.,	Fergus Falls.
Briggs, Byron B.,	Austin.
Burnley, Harold E.,	Hudson, Wis.
Campion, Alfred T.,	Angus.
Clark, John T.,	Dodge Center.
Clark, Robert W.,	Northfield.
Cowell, Fred J.,	Northfield.
Crippen, George E.,	Gottage Grove.
Cross, Albert D.,	Childs.
Cross, Orville,	Childs.
Davis, Elmer,	Bethel.
Fish, George W.,	Dundas.
Giesman, Walter,	St. Paul.
Haecker, Archie L.,	Cottage Grove, Wis.
Hagen, Edward N.,	Hagen.
Harris. Oliver B.,	St. Paul.
Hermes, Peter,	St. Paul.
Hewitt, Arthur H.,	Albert Lea.
Hillstrom, Theodore,	East Union.
Hopkins, Leigh H.,	Bloomington.
Hopkins, Merle R.,	Bloomington.
Hulberg, Martin,	New Market.
Johnson, Carl S..	Clark's Grove.
Johnson, Charles,	Red Wing.
Jones, David A.,	Ipswich, S. D.
Keller, Theodore,	St. Paul.
Kerr, Robert F.,	Rushmore.
Lane, Arthur,	Cando, N. D.
Lang, George H..	London.
Lawrence, Louis,	Springfield.
Lindig, Frank M.,	St. Paul.
Long, W. L.,	Good Thunder.
Ludlow, Milton,	Worthington.
McCullry, Edwin H.,	Campbell.
Magoffin, Shelby,	Duluth.
Malchow, Fred,	Hutchinson.
Mankel, Otto,	Norway Lake.
Meadowcroft, Ira C.,	London.
Middlebrook, Henry,	Eden Prairie.
Mullen, Fred C.,	Campbell.
Nield, W. D.,	Townsend, Mont.
Nelson, Arthur,	Clark's Grove,
Newcomb, S. B.,	Brownton.
O'Hara, Ernest,	Zumbro Falls.
Olson, Alfred,	Minneapolis.
Olson, John,	Minneapolis.
Persuhn, Fred W.,	Hutchinson.
Phillips, Aleck,	Lake City.
Porter, Edward H.,	Red Wing.
Pratt, Charles,	Bethel.
Rasmusson, Fred,	Hutchinson.
Rice, George E.,	Montecello.
Richardson, B. C.,	Garden City.
Rustad, Joseph,	Norway Lake.
Smith, Arthur E.,	Minneapolis.
Stevens, Richard,	Arvilla, N. D.
Trulson, Ferdinand,	Prescott, Wis.
Walsh, Michael,	Minneapolis.
Ward, Ralph,	Sumter.
Washburn, RobertM.,	Monticello.

Watson, Morris G.,		Cottage Grove.
Wesenberg, Fred,		Duluth.
Wickey, Edward,		Cannon Falls.
Wickett, Herbert,		Prosper.
Wilson, George A.,		Lake City.
Young, Manuel,		Wastedo.

Specials==8.

Ardley, L. R.,		Maine.
Boss, William,		Zumbro Falls.
Cash, C. F.,		Duluth.
Hillard, Archie,		Verndale.
Kelly, John L.,		St. Anthony Park.
Livingstone, Herbert E.,		Castle Rock.
Nelson, C.,		Albert Lea.
Pearce, George E.,		St. Paul.

Dairy School==30.

Anderson, Andrew,		Cooleysville.
Baldwin, J. H.,		Bedford, Iowa.
Brown, Mrs. Mary,		Minneapolis.
Bullis, Vern,		West Concord.
Butler, O. B.,		Villard.
Comstock, A. E.,		Alma City.
—Comstock, Mrs. A. E.,		Alma City.
Comstock, S. O.,		Alma City.
Dodd, G. M.,		New London,
Haessly, Stephen,		Herbert, Wis.
Janson, Jas. A.,		Woodville, Wis.
Jones. E. R.,		Cedarville.
Ketcham, R. S.,		St. Paul.
Kofstad, Otto,		Ross.
Kuehn, Ernest,		Rush River.
Moen, Lewis,		Albert Lea.
Moffett, H. A.,		Biscay.
Olstead, Carl,		Hanska.
Paulson, P. M.,		Owatonna.
Peterson. Chas.,		Minneapolis.
Rabius, G. H.,		Mayview, Mo.
Sloan, F. G.,		Cooleysville.
Stenberg, John,		Elizabeth City.
Sorson, N. P.,		Waupun, Wis.
Stahmann, W. F.,		Pine Knob, Wis.
Stensvad, Rudolph,		New Richland.
Swanson, C. A.,		Hoffman.
Thoreson, T.,		Woodville, Wis.
Tibbetts, H. C.,		Concord.
Vrooman, H. E.,		St. Paul.

DEPARTMENT OF LAW==277.

Graduate Students==7.

Bebb, William Bennett, *LL. B.*,		Minneapolis.
Benson, Charles Stuart, *LL. B.*,		St. Paul.
Burr, Stiles W., *LL. B.*,		St. Paul.
Chute, Louis Prince, *A. B., LL. B., Notre Dame*,		Minneapolis.
Hintermeister, John Henry, *LL. B.*,		St. Paul.
See, John Weldon, *LL. M., Univ. of Michigan*,		Minneapolis.
Taylor, Carl, *LL. B.*,		St. Paul.

Senior Day Section==85.

Adam, Arthur T.,		Elysian.
Austen, James Frederick,		St. Paul.
Avers, Fred H.,		Minneapolis.
Bailey, Henry Patterson, *B. S.*,		Minneapolis.
Benton, Andrew Arthur,		Madelia.
Braden, Angus Gladwyn,		Brooklyn, N. Y.
Buffington, George Wood,		Towanda, Pa.
Bugge, Hans,		Alexandria.
Campbell, F. A.,		Minneapolis.
Carroll, Bernard C., *A. B., Bowdoin*,		Minneapolis.
Castner, Frank Halleck,		Minneapolis.
Cheney, Zina Revillo,		Madelia.

Congdon, William Duncan,	Minneapolis.
Connor, Edward Michael,	Minneapolis.
Covell, Frank Edward, *B. S.*,	Minneapolis.
Crocker, Norman,	Ironwood, Mich.
Danner, Harry Ross, *A. B., Rutgers*,	Paterson, N. J.
Davis, Frank D.,	Mankato.
Dever, Charles S.,	Mabees, Ohio.
Dittenhoefer, Frank H., *A. B.*,	Minneapolis.
Eckman, Solomon H., *A. B., Gust. Adolph*,	Cokato.
Edwards, Albert Edward,	Jamestown, N. D.
Eggers, John Edward,	Wausau, Wis.
Farley, Frederick Lincoln,	Morenci, Mich.
Flynn, Arthur Pierce,	Caledonia.
Foley, M. E.,	Adrian.
Fridley, Don Phelps.	Becker.
Gallagher, Matthew,	Minneapolis.
Gregory, George,	Minneapolis.
Gruenberg, John,	Minneapolis.
Hawley, Edward W., *A. B.; Harvard; Hobart*,	Minneapolis.
Hendricks, John Albert,	Sacred Heart.
Hermann, Arthur Ludwig,	Minneapolis.
Hutson, Frank Alfred,	St. Paul.
Jackson, Joseph A., *A. B., Gust. Adolphus*,	Litchfield.
Jackson, William Augustus, *A. B.*,	Minneapolis.
Kelley, John Dominicus,	St. Paul.
Kennedy, Louis Henry, *A. B.*,	Litchfield.
Kirkpatrick, Tollen Frank,	Dundas.
Lamp, Frank Marion,	Medford.
Laughlin, Herbert Servetus,	Minneapolis.
Ludemann, William Fred,	Ludemann.
McBeath, Samuel Blair,	Minneapolis.
—McDermott, Marie Antoinette,	Minneapolis.
McElligott, Thomas James,	Glencoe.
Mathwig, Frederick August,	Owatonna,
Maurin, Peter Paul, *M. A., St. John's U.*,	Cold Springs.
Mayland, Andrew Unius,	Aspeland.
Merchant, Huntington Wolcott, *A. B. Princeton*,	Duluth.
Moen, Nels T.,	Dalton.
Mohler, Arthur Henry,	Le Sueur.
Morgan, George H., *U. S. M. A.*,	Minneapolis.
Morison, Samuel Benjamin, *A. B. Yale*,	Minneapolis.
—Morton, Nora L.,	Minneapolis.
Mueller, Robert,	Mankato.
Murphy, Franklin W.,	Pleasant Valley, Wis
Murphy, Patrich Joseph,	Luce.
Mussell, Wm. L., *Ph. B., U. of Man.*,	Hamline.
Neilson, Nels Peter,	Buffalo Lake.
Nudd, Benjamin Franklin,	Minneapolis.
O'Keefe, Patrick Henry,	Hastings.
Olsen, George Theodore,	St. Peter.
Olsen, Peter Simeon,	Albert Lea.
Peterson, Carl Fred Ernest	Minneapolis.
Petri, Gustave Axel, *A. B.*,	Minneapolis.
Pierce, William Littell	St. Paul.
Putnam, Charles Edward,	River Falls, Wis.
Randall, Richard Austin,	Winona.
Roesel, Adam,	Perham.
Rowe, William E.,	Gary, S. D.
Salisbury, Henry Clay,	Litchfield,
Sheehy, Richard Nicholas,	St. Paul.
Shields, James,	St. Paul.
Smith, George Ross	Sauk Centre.
Stacy, Albert Wallace, *B. S.*,	Washburn.
Stevenson, William John,	Quincy.
Sundberg, Harny Anthony,	St. Paul.
Sutherland, John Egbert,	Chatfield.
Sweet, John Cochrane,	Mankato.
Sylvester, Fairfield Eben,	Madelia.
Tattersfield, Richard,	Minneapolis.
Taylor, Edward Wesley,	Alexandria.
Tubbs, Harden Benson,	Sauk Centre.
Tyler, Albert DeForest,	St. Paul.
Winegar, Frank Lee,	Canton, Ill.
Young, George Morley,	Minneapolis.

Junior Day Section—91.

Avery, Edward Strong,	Minneapolis.
Berseth, Andrew Mikkelson,	Colfax, N. D.
Blaine, Edward J.,	Frankfort, S. D.
Bradford, James Everett, *B. A.*,	Minneapolis.
Brewster, William Bailey, *B. S.*, *Lake Forrest U.*,	St. Paul.
Briggs, Charles Wing,	Lake City.
Brown, William Jasper,	Rochester.
Burke, Edward Timothy,	Sheldon, N. D.
Burke, Walter James,	Cavalier, N. D.
Carley, James Allen,	Plainview.
Carnes, Robert Kenneth,	St. Paul.
Casey, John Marius,	Shieldsville.
Clarke, Benjamin Franklin, *B. A.*,	Rich Valley.
Combs, Lee Augustus,	Chester, Ia.
Conant, Howard, *A. B. Union*,	Minneapolis.
Crocker, Roland Douglas,	Minneapolis.
Crossett, Herbert Horatio,	St. Paul.
Cudhie, George,	Willow City, N. D.
Dahle, Olaus K.,	Wilmington.
De Luyra, Otis Bernard,	Long Prairie.
Deutsche, Henry,	Minneapolis.
Drew, Charles M., *Ph. G., Weslern*,	Minneapolis.
Dwinnell, William Benjamin,	Deadwood, S. D.
Evans, John Henry,	Hot Springs, S. D.
Funkley, Henry,	Fergus, Falls.
Gardner, Harris Wells,	St. Paul.
Gaston, Hugh Philander,	St. Paul.
Gibson, George Porter,	Atwater.
Gislason, Christian M.,	Minneota.
Gjerset, Knute,	Montevideo.
Glover, Harry Erastus,	Spencer, Ia.
Goldblum, Charles Ezekial,	Minneapolis.
Gottry, Edward Clinton,	Taylor's Falls.
Grady, Francis Augustus, *B. S.*,	Elkton, S. D.
Grotte, Anthony,	Minneapolis.
Gubbins, Day J.,	Minneapolis.
Gruenberg, George Joseph,	Minneapolis.
Gribbins, John Charles,	Minneapolis.
Guilford, William R.,	Boston, Mass.
Hannum, Harry Oliver,	Minneapolis.
Hickey, James Raymond,	Graceville.
Hodgman, William Henry,	Winnebago City.
Holm, Peter Andrews.	Minneapolis.
Jenkins, George Howard,	Aberdeen S. D.
Kepner, Thomas Ervin,	Rochester.
Kirwin, Peter Joseph,	Greenleafton.
—Lane, Frankie,	Oakland, Cal.
Larson, Constant,	Alexandria.
Leary, William Connor, *A. B.*,	Minneapolis.
LeCrone, John William,	Fairbault.
Lien, Elias Johnson,	Delevan.
Loughran, Thomas Francis,	St. Paul.
Lunke, Richard Olaus,	Minneapolis.
McCarthy, Cornelius Denis,	Mankato.
McMillan, Fred Dan,	Ogden, Utah.
Mackel, Alaxander,	Ada.
Madigan, James Edward, *B. S.*,	Maple Lake.
Manley, James Anthony,	Rushford.
Michelet, Simon Tenstrup,	Minneapolis.
Morris, John Fletcher Lewellyn, *B. S., Cornell*,	Philadelphia, Pa.
Mueller, George Dettloff,	Minneapolis.
Naylor, William Byron, Jr.,	Tomah, Wis.
Nimlos, Thomas,	Minneapolis.
Odquist, Carl Gustave,	Houston.
Otterness, George Henry,	Wilmar.
Oyen, Jacob, W.,	Minneapolis.
Pillsbury, Alfred Fiske,	Minneapolis.
Rice, Frederick Durkee,	St. Paul.
Rockne, A. J.,	Harmony.
Rogers, James Lyman,	Hillsboro, N. D.
Salmon, Thomas Homer,	Minneota.
Sands, Walter Booth,	Harlem, Mont.
Selover, William Arthur, *A. B.*,	Minneapolis.
Somsen, Henry Northup,	Minneapolis.
Sorenson, Luther Husher,	Minneapolis.

Storing, Charles Chester,	Minneapolis.
Tufte, Ben,	Minneapolis.
Vaaler, Rolleff,	Granite Falls.
Wagner, Charles William,	New Richland.
Walker, Edward David, *A. B.*,	St. Paul.
Wallace, Alexander Ford,	Minneapolis.
Waller, Robert King,	New London, Conn.
Ward, DeForrest,	Fairmont.
Wiley, John Lafayette,	Bushell, Ill.
Williamson, Alonzo Potter, *A M., Hamilton, M. D., Hahnemann*,	Minneapolis.
Wilson, Archibald Williamson,	Sacramento, Cal.
Winje, Louis Peder,	Duluth.
Wright, John Abner, *M. E. L., G. P. Sem.*	Onarga, Ill.
Yetter, Clarence Archie,	Rochester.
Zuckermann, Samuel Jr.,	Minneapolis.
Zuger, Alfonso,	Moorhead.

Senior Evening Section--25.

Angell, Edward Mott, *A. B. Haverford*,	Minneapolis.
Barton, Frederick William,	Minneapolis.
Beeman, Edwin Ruthven, Jr.,	Minneapolis.
Conlin, Henry,	St. Paul.
Cooley, Cayton R.,	Minneapolis.
Dullam, George Francis,	Minneapolis.
Erickson, Charles J.,	Minneapolis.
Hanchett, John,	St. Paul.
Higgins, Arthur Minot,	Minneapolis.
Hillman, William Oren,	St. Paul.
Ingraham, Alexander,	Minneapolis.
Iverson, Samuel G.,	St. Paul.
Kenyon, Moses Dibber,	St. Paul.
Kenyon, Oscar Edson,	Bay City.
McMurran, William Thomas.	St. Paul.
—Matteson, Flora E., *A. B. Wellesley*,	Faribault.
Megaarden, Philip Tollef,	Minneapolis.
Merrihew, Frank E.,	St. Paul.
Miley, Martin Edward,	St. Paul.
—Powers, Flora E.,	St. Paul.
Taylor, Adelbert Roland, *B. S., Carleton.*	Minneapolis,
Waters, William Bradford,	St. Paul.
Webb, Robert W.,	Minneapolis.
Webber, Clarence Albert,	Minneapolis.
Wickwire, Arthur Manley, *A. B., Williams*,	St. Paul.

Middle Evening Section--20.

Anderson, William Martin,	Minneapolis.
Barrett, Orin E.,	St. Paul.
Beek, Joseph Henry,	St. Paul.
Brett, Bernard Bullard,	Minneapolis.
Burns, Fitzhugh, *A. B., U of Mich.*,	St. Paul.
Cavanaugh, John,	St. Paul.
Clark, Homer Pierce,	St. Paul.
Cleveland, Frank Hanny,	St. Paul.
Davis, Alfred Bernal,	St. Paul.
Dickinson, William F.,	St. Paul.
Dresen, John Gile,	St. Paul.
Encell, Frank Elmer,	St. Paul.
Garrity, Thomas Anthony,	Minneapolis.
Gemmel, W. H.,	St. Paul.
Hertig, Wendell,	Minneapolis.
Hvoslef, John George,	Minneapolis.
Johnson, Frank A.,	St. Paul.
Lyon, Frederick Saxton,	Minneapolis.
Smith, John Alfred,	Minneapolis.
Weeks, Charles Louis,	Minneapolis.

Junior Evening Section--49.

Alair, Walter Ellsworth,	St. Paul.
Alderson, Charles Francis,	Minneapolis.
Appleton, George Holmes,	Minneapolis.
—Butman, Mary Elizabeth,	Minneapolis.
Clarke, Louis Herbert,	Rich Valley.
Corning, Leavitt,	St. Paul.
Dickey, J. M.,	Minneapolis.

Dickey, C. E.,	Minneapolis.
Dolenty, Francis Xavier,	St. Paul.
Dresen, Henry William, *St. John's Univ.*,	St. Paul.
Farnham, Frank Howard,	Calumet, Mich.
Force, Edwin Arthur,	Minneapolis.
Gardner, William H.,	St, Paul.
Glover, Newton Lemuel,	Farmington, Ia.
Hayes, Clarence Davis,	St. Paul.
Hayes, Richard M.,	St. Paul.
Henry, William John Cowan,	Minneapolis.
Hurd, Bradford Coryelle, *B. S.*,	Minneapolis.
Kane, A. A.,	Minneapolis.
Kellogg, Frederick Lorenzo,	St. Paul.
Knight, William Kirke,	Minneapolis.
Kyle, John Patrick,	St. Paul.
Lazarus, Jacob,	St. Paul.
Lee, Robert,	Minneapolis.
Loughran, Henry Arthur,	St. Paul.
McCaughey, John James,	St. Paul.
Macdonald, W. E.,	Minneapolis.
Maguire, Philip Josephus, *M. A.*,	St. Paul.
Mills, Harvey L.,	St. Paul.
Murphy, John B ,	St. Paul.
Norton Albert Eugene, *B. A.*, *Olivett*,	Marshall.
Otte, Ernest,	Hastings.
Palmer, Edmund,	Minneapolis
Pettingill, Claude K.,	St. Paul.
Porter, George Frederick,	Minneapolis.
Prendergast, L. W.,	St. Paul.
Putnam, Soren Newton,	Maine.
Richardson, N. C.,	Minneapolis.
Rickel, John George,	Minneapolis.
Sanders, M. T.,	St. Paul.
Siemens, Julius Andrew,	Minneapolis.
Tappan, John Elliot,	Minneapolis.
Torrance, Graham Macfarlance,	Minneapolis.
Tuper, Arthur W.,	St, Paul.
Valesh, Frank,	St. Paul.
VanCampen, Charles Howard,	Rochester.
Webber, John T.,	Minneapolis.
Whipple, Will Lewis,	St. Paul..
Wilson, Mark Ernest,	Minneapolis.

DEPARTMENT OF MEDICINE--271.

COLLEGE OF MEDICINE AND SURGERY--173.

SENIOR CLASS--37.

Adams, Rollin Theodore, *B. S., Carleton*,	Mantorville.
Aitkins, Herbert Baber, *B. A., Manitoba University*,	Minneapolis.
—Aubin, Marie Louise,	Minneapolis.
Batchelder, Edwin Josiah,	Stillwater.
Boehm, John Charles,	Rich Prairie.
Borchardt, Edward Augustus,	St. Paul.
Brabec, Frank Joseph, *B. S. '90*,	Hutchinson.
Cowing, George Philip,	Fergus Falls.
Cutts, Rollin Edward, *B. S. '90*,	Forest City.
Dahlquist, Gustaf William,	Minneapolis.
Dodge, Warren Maynard, *B. S. '90*,	Farmington
Eby, Cyrus Bowers,	Minneapolis.
Eby, John Robert,	Minneapolis.
Egge, Throud Swen,	Moorhead.
Erdmann, Charles Andrew,	Milwaukee, Wis.
Farrand, Corydon,	Oronoco.
Finstad, Gustaf Jens,	Norway.
Gilkinson, Andrew Jackson,	Gilkinson, W. Va.
Glenn, William,	Minneapolis.
Haggard, George Delaney,	Minneapolis.
Hendrickson, Hans F. W.,	Minneapolis.
Hilbert, Pierre Alphonse,	Minneiska.

Hirschfield, Adolph,	Minneapolis.
Holte, Halvor,	Etna.
Howard, Seth Evelyn,	Rochester.
Kistler, Charles Milton,	Minneapolis.
Koch, John Coenrad Theodore,	Minneapolis.
Larson, Anders David,	Minneapolis.
McKinnon, John Joseph,	St. Paul.
Meckstroth, Louis Wesley, *D. D. S. '91*,	Minneapolis.
Moen, Johannes Knudson,	Minneapolis.
Nelson, Henry S.,	Minneapolis.
Reiter, Henry Wm.,	Rockville.
Spottswood, Edward Whipple,	Minneapolis.
Stephan, Ernest Leonard,	Pine City.
Tennyson, Falk,	Minneapolis.
Van Valkenburg, Byron F.,	Springfield.

JUNIOR CLASS—39.

Appleby, Ernest Villiers,	St. Paul.
Arslanides, Michael T., *B. A. Anatolia College*,	Caesarea, Asia M'r.
Bacon, Knox,	St. Paul.
Ball, Charles Riggs, *B. A., Ohio Wesleyan*,	St. Paul.
Björnstad, Gisle, *B. A., Royal University of Norway*,	Christiania, Nor.
Bolkcom, George Washington,	Honsdale, Pa.
Butler, David,	Minneapolis.
Dodge, Albert Arthur, *B. S., '91*,	Farmington.
—Eastman, Frances A.,	Rose Creek.
Fly, Edward Monroe, *A. M. Lafayette College*,	Easton, Penn.
French, Leigh Hill,	Minneapolis.
Gunn, Frank H.,	Eau Claire, Wis.
Haas, Charles Andrew,	St. Paul.
Hanson, Marius,	St. Paul.
Heath, Albert Cheney, *B. A. Dartmouth*,	St. Paul.
Hesselgrave, Sherman Sedgwick,	Winnebago City.
Higgins, John Turner, *B. C. E., '90*,	Hutchinson.
Holmes, Walter Benjamin, *B. S., '88*,	Minneapolis.
Jennison, John Egbert,	Brighton.
Landeen, Frank Godfrey,	Brandon.
Law, Arthur Ayer,	Minneapolis.
Leavitt, Frederick,	St. Paul.
Lee, William Philander,	Sleepy Eye.
McMahon, Denis Joseph,	Credit River.
Muir, Edwin Stanton,	Hunter, N. D.
Nichols, George Clarence,	Wood Lake.
O'Connor, John Vincent,	Belle Plaine.
Oppliger, Gottleib,	Minneapolis.
Phillips, William Henry,	Minneapolis.
Powell, Charles Bertram,	Appleton.
Sawyer, Herbert Philander,	Berlin.
Sherwood, George Edward,	St. Paul.
Stebbins, Albert, Madison,	Glenwood.
Steele, Charles Terrell,	St. Paul.
Thrane, Marcus,	Eau Claire, Wis.
—True, Augusta Isabella,	Cheney.
Turner, Arthur Lorenzo,	Faribault.
Vigen, Jorgen G.,	Hellem.
Wilson, Louis Blanchard,	Pittsburg, Pa.

FRESHMAN CLASS—74.

Ames, Samuel Patten,	Minneapolis.
Anderson, Enoch Matthew,	Fergus Falls.
Angell, William Arthur,	Minneapolis.
Asseln, William Edward,	Fergus Falls.
Baker, Ray Alonzo,	Fergus Falls.
Barre, William, de la,	Minneapolis.
—Bassett, Mary Elizabeth,	Hastings.
Beaudoux, Henry A.,	St. Peter.
Bennett, Charles Edward,	St. Paul.
Bray, Charles William, *B. A., '81.*,	Excelsior.
Burgess, George Fred,	Mankato.
Burns, Frank Walter,	Rochester.
Campbell, George Elmore,	Rochester.
Carpenter, Carrol Clinton,	Anoka.
Claydon, Leonard Easton,	Perham.
Daily Milton,	Le Roy.
Danner, Edgar William, *B. A., Yale*,	Minneapolis.
Darling, Walter,	Mankato.
Farmer, John Coy,	Spring Valley.
Gates, Joseph A.,	Rochester.

Germo, Charles,	Medo.
Goldsbury, Paul William, *B. A.. Williams College.*	Minneapolis.
Goodrich, Judd,	Minneapolis.
Harrington, Charles Daniel,	Rich Valley.
Hart, Milan John,	Dover.
Head, George Douglas,	Minneapolis.
Holst, John Burton,	Clay Bank.
Hubbard, Edward Everett,	Minneapolis.
Hyslop, Fred R.,	Chester.
—Jameson, Adeline,	Neche, N. D..
Johnson, Walter Bliss,	St. Paul.
Knauff, Muhlenberg Kellar,	St. Paul.
Koivupalo, Edward Henry,	Calumet, Mich.
Leib, Ernest Benjamin,	Minneapolis.
Liland, Ragnvald,	Norway.
Lommen. Andreas Pederson,	Spring Grove.
Macdonald, Albert Edward S.,	St. Paul.
McLaughlin, Jerome Emillian,	Blue Earth City.
McQuivey, Elmer Ellsworth,	Minneapolis.
Manion, John Jay,	Eyota.
—Marsh, Grace Bertha, *B. A., Wellesley,*	Lewiston, N. Y.
Meckstroth, Charles W.,	Le Sueur.
Millet, Melvin Calvin,	Rochester.
Moquist, Otto Carl	Appleton.
Mueller, Leonard Marie,	Stillwater.
Newman, Gustavus Adolphus,	Goodhue.
—Nuzum, Mrs. Helen Brown,	Wheeling, W. Va.
O'Brien, Harry Jerome,	Minneapolis.
Oftedal, Hans,	Buxton, N. D.
Peck, Horace Edsall,	Minneapolis.
Pierson, Homer Francis, *B. L., '91,*	Grand Meadow.
Platt, John Jay,	St. Paul,
—Pretlow, Clotilde Ladd,	Minneapolis.
Ransom, George,	Dodge Centre.
Reeve, Edward Adolphus T.,	Buxton, N. D.
Remick, Louis Barry,	St. Paul.
Reynolds, Fred Eugene,	Minneapolis.
—Rhines, Mamie,	New York.
Ringnell, Frank Oscar,	Sweden.
—Ryley, Marie Jean,	Minneapolis.
Sheppard, Fred,	Lakeside.
Skinner, Herbert Eliot,	Albert Lea.
Slippern, Halfden,	Tacoma, Wash.
Smith, W. S.,	St. Paul.
Sorg, John Andrew,	Hastings.
Sorkness, Paul, *B. S., Univ. of Galesville,*	Minneapolis.
Sparling, Frederick George,	Manitoba.
Stephenson, John Linnæus,	Monango, N. D.
Tenney, Jacob S.,	Wabasha.
Thompson, Oan Joshua,	Reading, Pa.
Thyng, Date Kimball,	Minneapolis.
Walters, Eugene,	London, England.
Watson, Thomas R.,	Scotland.
Williams, Martin,	Lancaster, Wis.

Special Students—18.

Artz, C. P.	Minneapolis.
Bergdahl, C. A.	Minneapolis.
Blomberg, Alex Ferdinand,	Wasca
Boleyn, Emile Sidney,	Minneapolis,
Dohm, Charles Lawrence,	St. Paul.
Emanuel, Hamilton Worth, *M. D.,*	Milnor, N. D.
—Garber, Lou Maria,	Berne.
Grivelly, Charles Theodore,	Young America.
—Haverfield, Addie,	Minneapolis.
Heimark, Charles Benjamin,	Milan, Wis.
Krch, George,	St. Paul.
Lowthian, George Henry,	Minneapolis.
Melby, Gustave,	Minneapolis.
Nelson, Nels Carl Gustav,	Wheaton.
—Petitt, Loretta Jane,	Minneapolis.
Remstad, Swen Swenson,	Minneapolis.
Tuke, Harry Crichton,	Dover Center.
—Wetherall, Emma Lucile,	Oakland, Cal.

Unclassified Students—5.

Beek, Richard Hudson,	Minneapolis.
Collet, Joseph Pluteas,	Quebec, Canada.

Dillon, Richard Hastings,	Philadelphia, Pa.
Forsythe, John Alexander,	St. Paul.
Keogh, Harry,	St. Paul.

COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY--24.

SENIOR CLASS--9.

Beach, William Artemus, *B. S., '90,*	Minneapolis.
Hedlund, John,	Minneapolis.
Kleine, James Franklin,	Minneapolis.
Richardson, Oscar Kelsey, *B. S., '90,*	Minneapolis.
Smith, Wade, Winfield,	Clinton, Wis.
Spurr, Stephen Howard,	Morris.
—Stephens, Edna Amanda,	Hamline.
Wright, Edwin Adams,	Howard Lake.
—Young, Mrs. Esther Hayes,	Excelsior.

JUNIOR CLASS--4.

—Frost, Bertha L.,	Hudson, Wis.
—Gilman, Mrs. Addie Ford,	Mazeppa.
—Hopkins, Minnie M.,	Minneapolis.
Sugden, Charles Edward,	Winnipeg.

FRESHMAN CLASS--11.

Beaty, James H.,	Lake City.
Glasby, Robert LeRoy,	Minneapolis.
Hammond, Asa John, *B. A., '91,*	Lake City.
Hamlin, George Baldwin,	Minneapolis.
Kirkpatrick, William David,	Minneapolis.
—Koch, Margaret,	Lake City.
Moffatt, Albert Groves,	Bathgate, N. D.
Partridge, Orlando Frances,	Fergus Falls.
Renner, Edwin Gilbert,	Minneapolis.
—Serviss, Mrs. Clymena,	Minneapolis.
—Terwilliger, Innes Lucetta,	Minneapolis.

COLLEGE OF DENTISTRY--61.

SENIOR CLASS--13.

—Edgar, Caroline Augusta,	Sauk Centre.
Haas, Edward,	St. Paul.
—Hartzell, Mary Victorine,	Minneapolis.
Hartzell, Thomas Bradford,	Minneapolis.
Holmes Eugene Pollock,	Faribault.
Jewett, William Frederick.	Minneapolis.
Means, George Emery,	Howard.
Monson, George Silas,	St. Paul.
Storè, Arthur Oscar,	St. Paul.
Taylor, Henry Hurlburt,	Minneapolis.
Weiss, Oscar Albert,	Hortonville, Wis.
Whittaker, Frank Noble.	Minneapolis.
Wood, George Wood,	Fairbault.

JUNIOR CLASS--10.

Barrett, William Osgood,	Browns Valley.
Handy, John Paul,	Long Prairie.
Hurd, Herbert Bury.	Minneapolis.
Laughlin, Jesse Emerson,	Kohoka, Mo.
Lowe, Martin F.,	Minneapolis.
Mero, Frank Herman,	Minneapolis.
Owre, Alfred,	Minneapolis.
Walls, James Martin,	St. Paul.
Whiting, Arthur Deming,	Northfield.
Yoseph, Yoseph David,	Oroomah, Persia.

FRESHMAN CLASS--23.

Anderson, Cassius Lionel,	Tomah, Wis.
Babcock, Henry Crandal,	Afton.
Benham, Edward Weston,	Merrian Park.
Boyesen, Aksel Trygve,	Norway.
Brearley, Guy Thomas,	Minneapolis.
Cobb, Frederick Emory,	White Bear.
Demo, William Anthony,	Hokah.
Herrick, Clayton C.,	Rochester.
Judson, Harry Carlton,	St Paul.

Kyle, Frank Horton,	St. Paul.
Leonard, George Rowe,	Twin Bridges, Mont
Maguire, James Oscar,	East Dubuque, Ill.
Nelson, Mark Owens,	St. Paul.
Newell, Thomas Glenn,	Adrian.
Robinson, Frank Spaulding,	Wabasha.
Sanderson, Smith Arthur,	Duluth.
Sauer, Arthur Jay,	St. Paul.
Sewall, Ralph J.,	Minneapolis.
Sinclair, Erwin Lee,	Byron.
Taylor, Ernest Ryal.	Minneapolis.
Todd, George Silas,	Chippewa Falls, Wis.
Wagner. Frank Jacob,	New Richland.
Watson, Nathan Levi,	St. Paul.

SPECIAL STUDENTS--12.

—Apfeld, Rose,	Kingston.
Babcock, Oro DeGarmo,	Minneapolis.
Blomquist, Charles Adolph,	Minneapolis.
Day, George Ransom,	Farmington.
Eldred, Bert,	Rushford.
Gibson, B. J.	Minneapolis.
Goodwin, Myron Page, *M. D. Rush Med. College,*	Hudson, Wis.
Irwin, Edmund,	Minneapolis.
James, Edward Oliver,	St. Paul.
Rogers, Edward Sheffield,	Minneapolis.
Sullivan, Edwin,	Minneapolis.
Yemen, John Peter Alex,	St. Paul.

UNCLASSIFIED STUDENTS--3.

Carter, Clarence Wilson,	Minneapolis.
Johnson, Albert Wesly,	Flint.
Lord, C. W.,	Minneapolis.

THE COLLEGE OF PHARMACY.

FRESHMAN CLASS--11.

—Blanchard, Lucy H. Adams,	St. Paul.
Bolton, Miller Thompson,	Plainview.
Hart, Alfred Benjamin,	Minneapolis.
Haugseth, Enoch,	Minneapolis.
Hovorka, Thomas Wenceslaus,	New Prague.
Leubner, Bernhard Otto,	Minneapolis.
Lienau, Walter Reimar,	Minneapolis.
McCloud, C. Numann,	Macallester Park.
Munch, Graham W.,	Crookson.
Nickerson, Clifford Farnham,	Elk River.
Von Rohr, Arthur,	Winona.

SPECIAL STUDENTS--2.

Hillard, Archie Harwood,	Verndale.
Sanderson, Stephen Francis,	Minneapolis.

HONORS AT GRADUATION.

AWARDED UPON THE BASIS OF SCHOLARSHIP.

Elizabeth Alma Peters, - - - - - - - Valedictorian.
Albert Cornelius Knudson, - - - - - - Salutatorian.

PHILOSOPHICAL ORATIONS.

Charles Elon Young; Clara N. Kellogg; Emily Ruth Harris; Jessie Paine Smith; Mary Elizabeth Bassett; Albert Fuller Pratt; Leila Pamelia Johnson.

ORATIONS.

Thomas Freeman Wallace; Minnie Arabella Perkins; Benjamin Chandler Taylor; Franc Murray Potter.

Summary of Students.

THE GRADUATE DEPARTMENT.

	Men.	Women.	Total.
Candidates for the degree of Doctor of Philosophy.	17		17
Candidates for the degree of Master of Arts	7	4	11
Candidates for the degree of Master of Science	8		8
Candidates for the degree of Master of Literature	1	1	2
Candidates for the degree of Mechanical Engineer	1		1
Candidates for the degree of Masters of Laws	7		7
Others doing graduate work	22	20	42
Total	63	25	88

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS.

		Men.	Women.	Total.
Senior Class	Classical Section	22	3	25
	Scientific Section	14	8	22
	Literary Section	5	21	26
Junior Class	Classical Section	22	3	25
	Scientific Section	33	8	41
	Literary Section	9	20	29
Sophomore Class	Classical Section	25	6	31
	Scientific Section	34	14	48
	Literary Section	11	21	32
Freshman Class	Classical Section	30	8	38
	Scientific Section	58	34	92
	Literary Section	17	47	64
	Teachers' Section		22	22
Special students		41	95	136
Total		321	310	631

THE COLLEGE OF ENGINEERING, METALLURGY AND THE MECHANIC ARTS.

		Men.	Women.	Total.
Senior Class	Civil Engineering Section	4		4
	Mechanical Engineering Section	2		2
	Electrical Engineering Section	6		6
	Architectural Section	1		1
Junior Class	Civil Engineering Section	5		5
	Mechanical Engineering Section	3		3
	Electrical Engineering Section	7		7
	Mining Engineering Section	3		3
	Architectural Section	1		1
Sophomore Class	Civil Engineering Section	5		5
	Mechanical Engineering Section	5		5
	Electrical Engineering Section.	10		10
	Mining Engineering Section	5		5
	Architectural Section	2		2
Freshman Class	Civil Engineering Section	14		14
	Mechanical Engineering Section	8		8
	Electrical Engineering Section.	28		28
	Mining Engineering Section	4		4
	Architectural Section	4		4
	Chemical Section		1	1
Special Students		33	1	34
School of Practical Mechanics		23		23
School of Design		5	43	48
Total		178	45	223

THE COLLEGE OF AGRICULTURE.

	Men.	Women.	Total.
Junior Class	1		1
Sophomore Class	2		2
Freshman Class	4		4
The School of Agriculture—Class A	21		21
Class B	18		18
Class C	67		67
The Dairy School	28	2	30
Special Students	8		8
Total	149	2	151

THE DEPARTMENT OF LAW.

	Men.	Women.	Total.
Graduate Students	7		7
Senior Class—Day Section	83	2	85
Evening Section	23	2	25
Middle Class—Evening Section	20		20
Junior Class—Day Section	90	1	91
Evening Section	48	1	49
Total	271	6	277

THE DEPARTMENT OF MEDICINE.

The College of Medicine and Surgery.

Senior Class	36	1	37
Junior Class	37	2	39
Freshman Class	67	7	74
Special Students	14	4	18
Unclassified	5		5
Total	159	14	173

The College of Homeopathic Medicine and Surgery.

Senior Class	7	2	9
Junior Class	1	3	4
Freshman Class	8	3	11
Total	16	8	24

The College of Dentistry.

Senior Class	11	2	13
Junior Class	10		10
Freshman Class	23		23
Special Students	11	1	12
Unclassified	3		3
Total	58	3	61

The College of Pharmacy.

Freshman Class	10	1	11
Special Students	2		2
Total	12	1	13

SUMMARY OF TOTALS.

	Men.	Women.	Total.
Graduate Students	63	25	88
The College of Science, Literature and the Arts.	321	310	631
The College of Engineering, Metallurgy and the Mechanic Arts	178	45	223
The College of Agriculture	149	2	151
The Department of Law	271	6	277
The Department of Medicine	245	26	271
	1227	414	1641
Duplicates	19	2	21
Total	1208	412	1620

Agricultural Experiment Station.

STATION STAFF.

CLINTON D. SMITH, M. S., *Director.*
SAMUEL B. GREEN, B. S., *Horticulturist.*
OTTO LUGGER, PH. D., *Etomologist and Botanist.*
HARRY SNYDER, B. S., *Chemist.*
T. L. HAECKER, *Dairying.*
CHRISTOPHER GRAHAM, B. S., V. M. D., *Veterinarian.*
J. A. VYE, *Secretary.*

In compliance with the acts of state and national legislation, the Board of Regents organized and equipped the experiment station on the University farm, using the land, buildings, stock and machinery for the purpose of experimentation, as well as for instruction and illustration.

The results of all experiments are published quarterly or oftener in bulletins, which are mailed free to all who apply to the director for them. The present mailing list exceeds 14,000 names. During the past year the following bulletins have been issued:

Bulletin No. 20.—Fertilizers; Improvement of Timothy; Rape in Minnesota; Peas and Oats; Field Peas.

Bulletin No. 21.—Sugar Beets; Sorghum.

Bulletin No. 22.—Comparison of corn and barley; corn and shorts; barley and shorts; corn, shorts and oil meal, and barley, shorts and oil meal in the ration of growing pigs. 1. Corn vs. barley for fattening hogs. 2. Corn meal, barley meal and a mixture of barley meal and oil meal compared. 3. Wet vs. dry feed.

Bulletin No. 23.—Wheat: 1. Milling and baking tests. 2. Cooperative tests with selected seed wheat. 3. The Frit fly; preliminary report upon an insect injurious to wheat.

Bulletin No. 24.—Ornamental and Timber Trees; Shrubs and Herbaceous Plants in Minnesota; notes on their hardiness and desirability.

Bulletin No. 25.—Report on small fruits; notes from trial stations; notes on renewing old strawberry beds; shading strawberry beds; Seedling Fruits; Analysis of Grapes; Spraying Grape Vines.

Bulletin No. 26.—Digestion Experiments; Milch Cows; Pea

Ensilage and Wheat Bran; Pigs; Barley and Shorts; Barley, Corn and Shorts; Corn; Shorts; Corn and Bran; Peas and Bran; Peas; Bran.

Bulletin No. 27.—I. The Composition of Fodder, Wheat and Milled Products. II. The Composition of Dairy Products. III. Sugar Beets.

Bulletin No. 28.—Insects and their relation to Agriculture.

The work of the experiment station is directed toward the solution of problems of present practical interest to those engaged in farming. Animal industry, forage and grain crops, vegetable and fruit gardening, forestry, dairying, agricultural chemistry and veterinary science, all receive their due share of attention.

Among the subjects of present investigation may be mentioned the following: Extended trials of different varieties of corn in several parts of the state, hoping, by careful selection, to extend northward the limit of profitable corn production, and by cross-fertilization to improve still farther the best known varieties; the treatment of seed wheat by hot water, copper sulphate solution and other fungicides to prevent smut; a trial of certain grasses and forage plants which the plot culture of the botanist has led us to believe to be best adapted to the wants of the farmer, in acre plots in various parts of the state; the creaming of milk of cows at different stages of the period of lactation; feeding experiments, including the comparison of timothy and clover, of oil meal and flax, of corn and barley; variety tests of apples, plums, grapes and berries; crossing of seedlings of fruits and berries; testing the effect of spaying cows on the duration of lactation, and yield and quality of milk; testing the value of tuberculine and mallein as diagnostic agents; a continuation of the previous year's work on the composition of the different grades of wheat, the composition of the wheat plant in its different stages of growth, and the draft made upon the soil by the growth of the plant; analysis of soils; digestion experiments; a study of sugar beets and sorghum; a study of the more prominent insects that make depredations in the state; a study of the native and foreign grasses and forage plants of which seed is accessible, plots of 650 different varieties being under cultivation.

L'ÉTOILE DU NORD.